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ICARUS - INTERACTIVE MULTIMEDIA PRESENTATION SYSTEM (I-IMPRESS)

Decision-Science Applications, Inc.

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and Donald Miller

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Information technology, as well as the hardware and software to support advanced applications, has progressed at an extremely fast pace over the past decade. DSA's I-IMPRESS effort for the Rome Laboratory Intelligence Directorate was a low-risk undertaking that took advantage of the current state-of-the-art (SOTA) in all areas to develop and demonstrate an interactive multimedia presentation capability. The capability was initially centered in the ICARUS laboratory with connectivity to two other areas in the Intelligence Directorate as a means to demonstrate and showcase the potential of such a multifunctional capability.

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1. INTRODUCTION

This report documents a 12 month effort undertaken to develop a prototype Hardware and Software Distributed Interactive Multimedia Presentation System using Commercial Off The Shelf (COTS) hardware and software. This effort is part of the "ICARUS-Interactive Multimedia Presentation System (I-IMPRESS)" program, contract F30602-94-C-0097, to Rome Laboratory (RL/IRAE).

Information technology as well as the hardware and software to support advanced applications has progressed at an extremely fast pace over the past decade. Decision-Science Applications' (DSA) I-IMPRESS effort for the Rome Laboratory Intelligence Directorate was a low risk undertaking that took advantage of the current state-of-the-art (SOTA) in all areas to develop and demonstrate an interactive multi-media presentation capability. The capability was initially centered in the ICARUS laboratory with connectivity to two other areas in the Intelligence Directorate as a means to demonstrate and showcase the potential of a such a multi-functional capability.

1.1 BACKGROUND

One of the many goals of an organization is to display the products that are generated by the various departments within the organization. These products can range from hard goods to soft goods (i.e., technology like mathematical algorithms). The traditional means of displaying this information has been via printed material, audio or video presentations, or face to face demonstrations in a closed setting (conference room, laboratory, etc.). In the case of an organization that is widely disbursed, either in several rooms, several buildings or several separate geographic locations there is an added burden to produce a presentation. The members of the organization must come to a central place to present their information, or the audience must be shuttled about from location to location to view the presentations in place.

Both of these methods of providing presentations have advantages and disadvantages. The advantages include the ability to have a direct dialog between the presenter and the audience with up to date information. Among the disadvantages are that, in the former method, the presenter is being taken away from his work area during the presentation time even though his portion of the overall presentation may be minimal. Thus you have reduced productivity from the presenter who must sit through long presentations which may or may not be of interest to him/her. The second method of doing presentations, shuttling the audience around to the different product areas, has the disadvantage of reducing the total amount of time available to do presentations because of the added overhead of travel time, and there are the logistics of transporting the audience to the different sites. Also the sites may be remote enough that it is unfeasible to attempt to go to the site.

A specific case of this problem can be viewed at the shift changes at Cheyenne Mountain where a new shift commander coming on must be given an inbrief by each of the various groups in the mountain (weather, ops, force status, etc) at the beginning of the shift. This normally entails the commander of each area coming to a central briefing area to give his inbrief to the shift commander.

One solution to this type of problem is to have a computer based distributed briefing/presentation capability. This capability would have the audience view the presentation from one workstation while the different briefers present their information from their own workstations in their office, laboratory, or work area. DSA developed a prototype called C2 VIEW for Cheyenne Mountain to allow the various area commanders to remain at their stations while giving the shift commander their portion of the in brief. The C2 View concept is shown in the following figure.

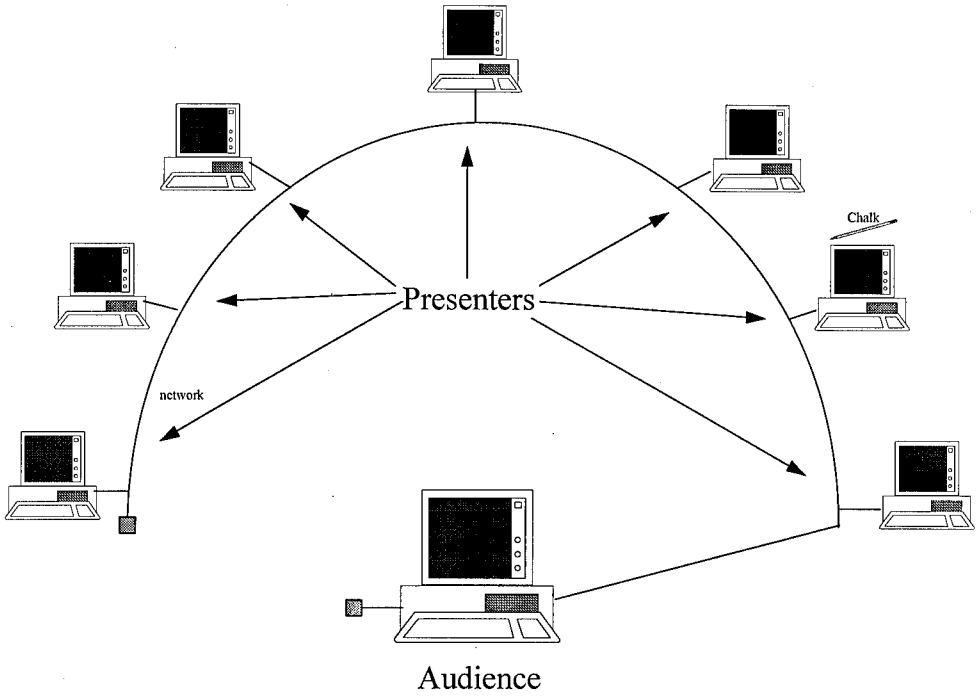

Figure 1-1. C2 VIEW Concept

The C2 VIEW prototype provided the capability for distributed workstations to view one common presentation with the control of the presentation being provided by any one of the workstations. The control was passed from the workstation currently presenting to the next workstation that was to present their information. This passing of control is referred to as "Passing the Chalk". The C2 VIEW prototype was implemented using Silicon Graphics Workstations and Commercial Off The Shelf (COTS) software. The I-IMPRESS effort was started to build upon the experience gained with the C2 VIEW prototype.

1.2 OBJECTIVE

The primary objective of I-IMPRESS was to develop a distributed interactive multimedia presentation system for evaluation at RL with the primary node located in the ICARUS laboratory. The basis for I-IMPRESS was the C2 VIEW prototype developed by DSA for Cheyenne Mountain.

1.3 SCOPE

The scope of tasks and features to be implemented in the I-IMPRESS prototype are as follows:

- ***Site Survey*** - Complete a survey of the RL/IR laboratories and facilities to determine the best candidates for installing the I-IMPRESS Prototypes for the operational evaluation period.

- ***Common GUI*** - Allows access to software programs over the network in the selected laboratories where nodes are positioned.

- ***Interactive Multimedia Presentation and Conferencing Capability*** - Various presentation materials (view graphs, film, TV, animation, sound) can be used to develop briefings. The developed briefings are integrated into a demonstration which can be viewed at multiple node locations.

- ***Ability to Animate, Draw or Highlight Screen Information*** - The individual with control (who has the chalk) will have the ability to use a pointing device (mouse, etc.) to annotate, animate or highlight the screen as desired. This information is passed in real time to all nodes.

- ***Briefer on Screen*** - The Indy Cams which are a part of each node provide a briefer on screen (in a window) on each of the nodes via the commercial software package InPerson. This display shows the current briefer (person with immediate control) of the presentation.

- ***Context Sensitivity*** - All participants on the I-IMPRESS have active 2 way audio. This allows discussion between nodes and questions from nodes during the presentations. The person briefing (who has chalk) would have set up appropriate links with his/her respective databases using Gain Momentum to allow real time access. Questions requiring database access are supported as the briefer can access the database and display the appropriate information to the audience.

- ***Desktop Environment*** - The Indys are extremely powerful workstations and are capable of performing numerous other functions when not in use for demonstrations. The user can set up the desktop to access other programs and perform other functions as dictated by specific job requirements. In some cases other software packages would need to be put on the network (PC or MAC emulator, word processing, spreadsheet, TAC BRAWLER, MATLAB, etc.).

- ***Transfer of Presentation Control*** - Specific presentations can be given from any of the nodes, based on which node has control. Control can be passed to different nodes at appropriate times under I-IMPRESS. This is referred to as ***"passing the chalk."***

- ***Conference Tool*** - A stand-alone tool was written to work with the Gain Momentum software. This "Tool" allows nodes to enter and exit the interactive sessions transparently. This software is new and a complement to the Gain Momentum COTS. RL now owns this tool which can be utilized to support other VTC applications throughout the laboratory.

- ***Operational Evaluation*** - An operational evaluation period will involve placing and operating three presentation nodes in Building 240 (IR Directorate). Following the hardware installation and training of Rome Lab users, a demonstration of the capabilities will be provided using all 3 nodes. This demonstration should exhibit the basic functionality of the prototype.

2. SITE SURVEY

DSA completed a survey of the RL/IR laboratories and facilities to determine the best candidates for installing the I-IMPRESS Prototypes for the operational evaluation period. Results of this survey are covered in References 1 & 2 and in Appendix A. Following the completion of the site survey a preliminary configuration of the I-IMPRESS nodes was developed and is shown in the following figure.

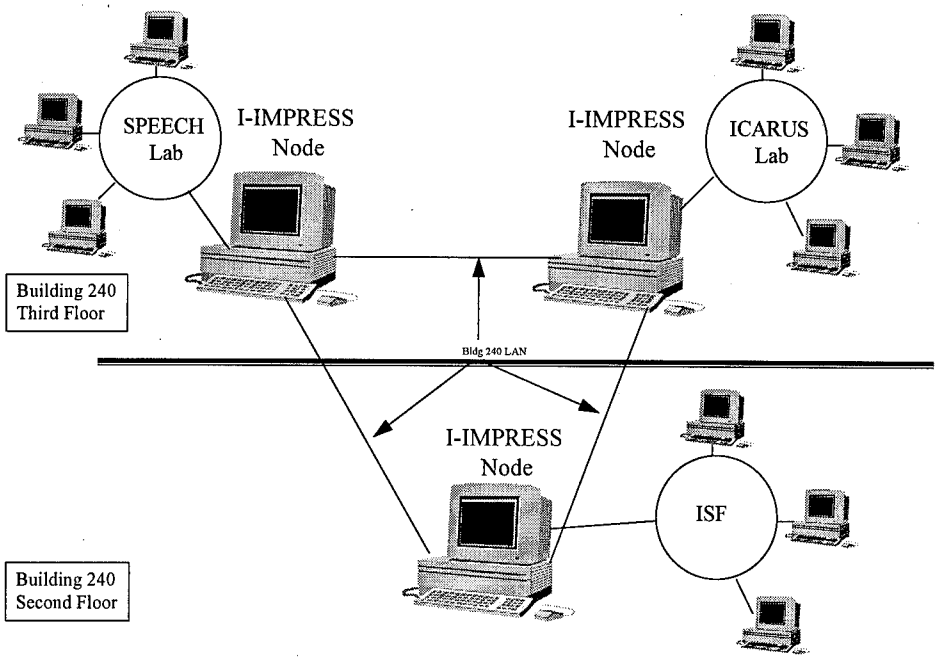

Figure 2-1. Initial I-IMPRESS Node Configuration

3. CAPABILITIES PROVIDED IN THE I-IMPRESS PROTOTYPE

The features implemented in the I-IMPRESS prototype are described in the following sections. A majority of the I-IMPRESS prototype was implemented using Silicon Graphics Workstations and Commercial Off The Shelf (COTS) software. The passing of the chalk capability developed by DSA was written using the Gain Momentum COTS product so that it can be implemented on any workstation running the Gain Momentum package.

3.1 COMMON GUI

DSA leased three Silicon Graphics Inc. (SGI) Iris Indy Workstations for the I-IMPRESS effort. The workstations came equipped with the Silicon Graphics version of UNIX (IRIX 5.2) with the Indigo Magic Desktop Environment as the graphical user interface (GUI) to the system. The Indigo Magic Desktop conforms to the X-Window/Motif standard with SGI extensions.

The SGI Indy workstations using Indigo Magic Desktop Environment fulfills the requirement to have a common GUI for access to software programs in the ICARUS/other IR facilities. Any programs utilizing the native X-Window system calls or the SGI extensions can be executed from the Indy workstations.

In addition to the common GUI the workstations support multi-user preemptive multitasking. This allows the systems to be used by several users simultaneously.

Networking on the workstations is set up to use the TCP/IP protocol. Users can access the workstations and other nodes on the network via the telnet program for interactive program control or ftp for file transfer between nodes on the network.

Security on the workstations is provided via the standard UNIX operating system via user accounts and passwords. The security can be extended through TCP wrappering, gateway access control, modem passwords, etc., as the system administrator deems necessary.

This description only touches on the full capability of the Indy workstations. The reader should reference the users manual for the workstations and the IRIX operating system for further details.

3.2 INTERACTIVE MULTIMEDIA PRESENTATION & CONFERENCING

I-IMPRESS uses the Gain Momentum software package from SYBASE to provide the ability to access and use various multimedia materials/products for presentations and demonstrations. Gain Momentum is used in its off-the-shelf configuration. The following two figures illustrate tools that are available within the Gain Momentum Package. The first is the Application Editor where all drawing is performed like a presentation graphics tool, controls (i.e., buttons), are generated, as in a programming language, and audio and video are added. The second figure shows the audio tool that is accessed from the application editor for adding and modifying audio to a presentation. The reader should refer to the Gain Momentum Users Manuals for full details on the use of these tools.

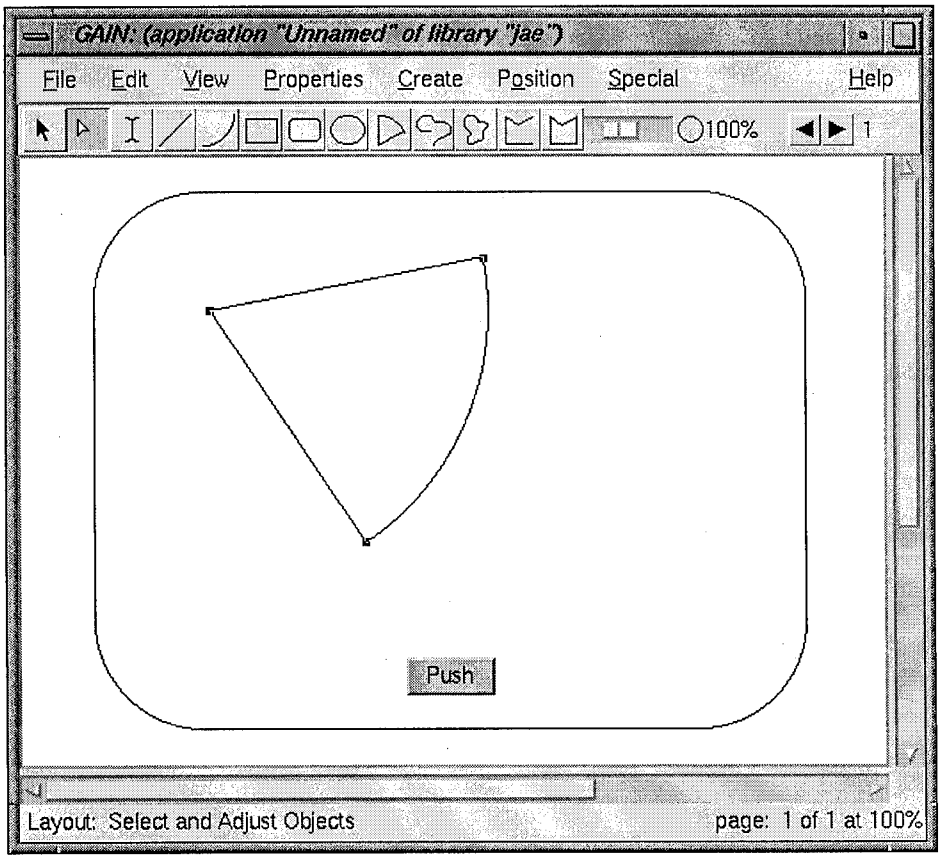

Figure 3-1. Gain Momentum Application Editor

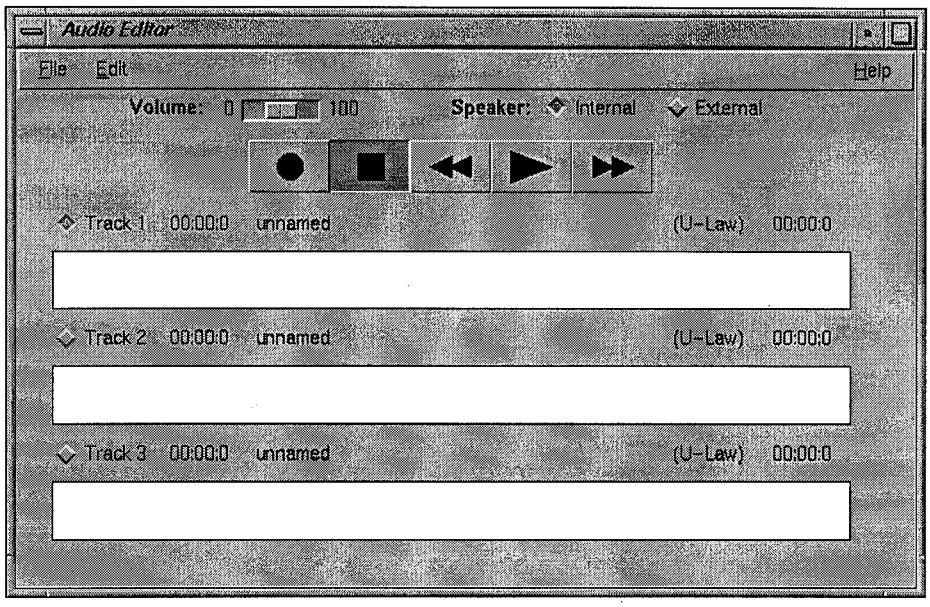

Figure 3-2. Gain Momentum Audio Editor

The InPerson COTS video teleconferencing software provides all interactive Video/Audio teleconference requirements.

3.3 SUPPORT FOR VIEW GRAPHS, FILM, TV, ANIMATION, SOUND, AND BRIEFER ON SCREEN

The Gain Momentum software allows users to build their respective presentations in a form that can be used by the hardware and be passed over the network to participating nodes. Gain Momentum has built in support for view graphs, movies, animation, and sound. In essence, the view graphs, TV/film clips are captured and stored for use in presentations.

The Gain Momentum TimeLine Editor tool was used to incorporate and play the audio and video data. The following figure shows the TimeLine Editor. A timeline can be applied to a given page of a presentation and can be triggered to start on any of the Gain Momentum standard events, such as a page turn, button push, mouse click, etc. The reader should refer to the Gain Momentum Users Manuals for full details on the use of this tool.

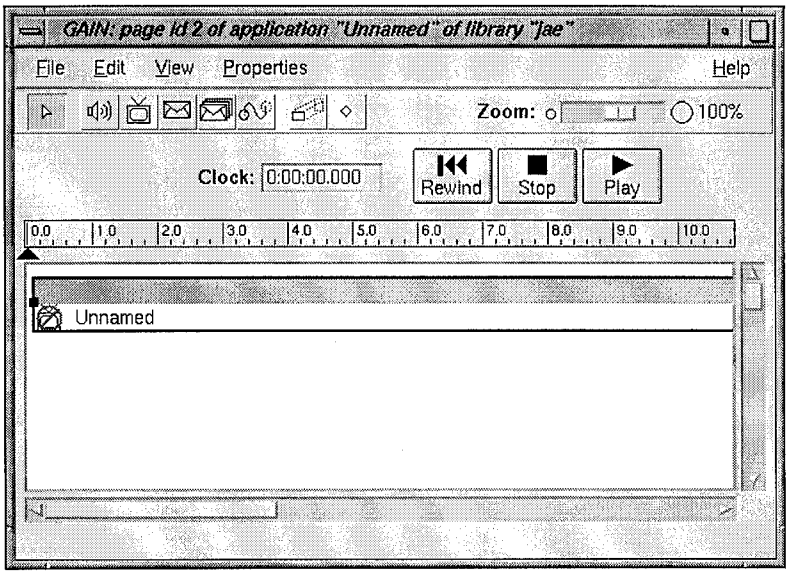

Figure 3-3. Gain Momentum TimeLine Editor

Live TV is not a part of the current program; however, there is no reason it couldn't be done in the future. The question would be when should it be used and how would it be beneficial to an interactive presentation. Our intent with the TV/film clip capability was to capture relevant information in advance and use it in the presentation where it fit in context. Should this capability be required, an antenna or cable hookup and tuner would be required.

The Indy Cams which are a part of each node provide a Briefer On Screen (in a window) on each of the nodes via the commercial software package InPerson. This display shows the current briefer of the presentation.

3.4 TRANSFER OF CONTROL AMONG PARTICIPANTS (PASSING THE CHALK)

Specific presentations can be given from any of the nodes based on which node has control. Control can be passed to different nodes at appropriate times under I-IMPRESS. This is referred to as ***"passing the chalk."*** The control for passing the chalk has been built into the conference tool portion of the I-IMPRESS package. The conference tool, as shown in the following figure, includes information on the conference that is being conducted. It covers the status of the server computer, the status of the chalk, whether the chalk is available for taking, and who is involved in the conference. DSA rewrote the C2 VIEW chalk passing/conferencing software (previously designed for SGI Showcase) to integrate the passing the chalk capability into the Gain Momentum package. This provides a more robust capability, should the prototype be selected for further development.

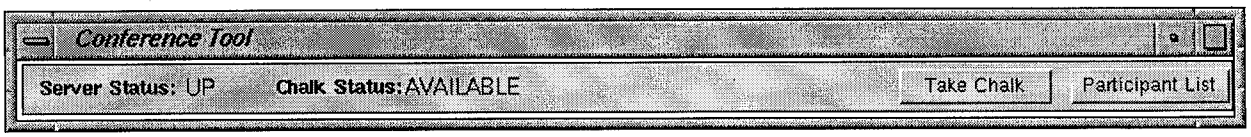

Figure 3-4. Conference Tool

3.5 SUPPORT ANIMATION, DRAWING, OR HIGHLIGHTING SCREEN INFORMATION

Gain Momentum and InPerson support screen annotation or the ability to point out/highlight an area on the workstation screen/presentation. The white board in InPerson is a window which is called up and passed to participants by the briefer. All screens can have an active white board, and all can use the mouse to draw, etc., in the interactive mode. Each conference node has a separate ICON and chalk color to allow other viewers to determine who is drawing. If there is the need to highlight information on a map, the map would be copied onto the white board to allow the drawing. Drawing could be as simple as using the mouse to highlight an area or drawing/animation.

3.6 SUPPORT AUDIENCE PARTICIPATION/PROVIDE DATABASE ACCESS

All participants on the I-IMPRESS have active two way audio via the InPerson Software. This provides the capability for all participants to ask and respond to questions during the presentation. This allows discussion between nodes and questions from nodes during the presentations.

The Gain Momentum software provides the capability to access databases via the Structured Query Language (SQL). Most of the databases in use can be accessed using SQL queries. The briefer can then use Gain Momentum to access the appropriate SQL databases. The briefer would have set up appropriate links with his/her respective databases at the time the presentation is built using Gain Momentum to allow real time access. Questions requiring database access can then be supported as the briefer can access the database and display the appropriate information to the audience. The level of context sensitivity is based on what the briefer has established ahead of time. The briefer would select the databases which would be tied to his area and perform appropriate linking functions during presentation setup.

3.7 SUPPORT OTHER COMPUTING REQUIREMENTS

The Iris Indigo Magic Desktop provides easy access to all of the capabilities of the Indigo line of computers as well as a convenient interface to other computers connected by a network. The Indigo Magic Desktop provides icons for the most popular programs right on the desktop within easy reach. The programs include tape and CD-ROM drive management, a Window based text editor, a file management tool and a "dumpster" for deleting files and directories. The Indys are extremely powerful workstations and are capable of performing numerous other functions when not in use for demonstrations.

The user can also add any of his/her own program icons to the desktop through the Indigo Magic Menus. These icons will then be available with a simple selection by the mouse each time the user logs in to the desktop. One example of another program that the user can have available on the desktop is the Mosaic tool. This tool gives the user access to a wealth of information on computers throughout the internet and World Wide Web. An example of the Mosaic tool running from the Indigo Magic Desktop is shown in the next figure.

The user can set up the desktop to access other programs and perform other functions as dictated by specific job requirements. Should other PC Based applications need to be utilized on the workstation there are PC and Macintosh emulation packages (Soft PC/MAC, Word, Spreadsheet, etc.) for the SGI machines that can be purchased for use where necessary. This is a user specified capability that is implemented based on needs.

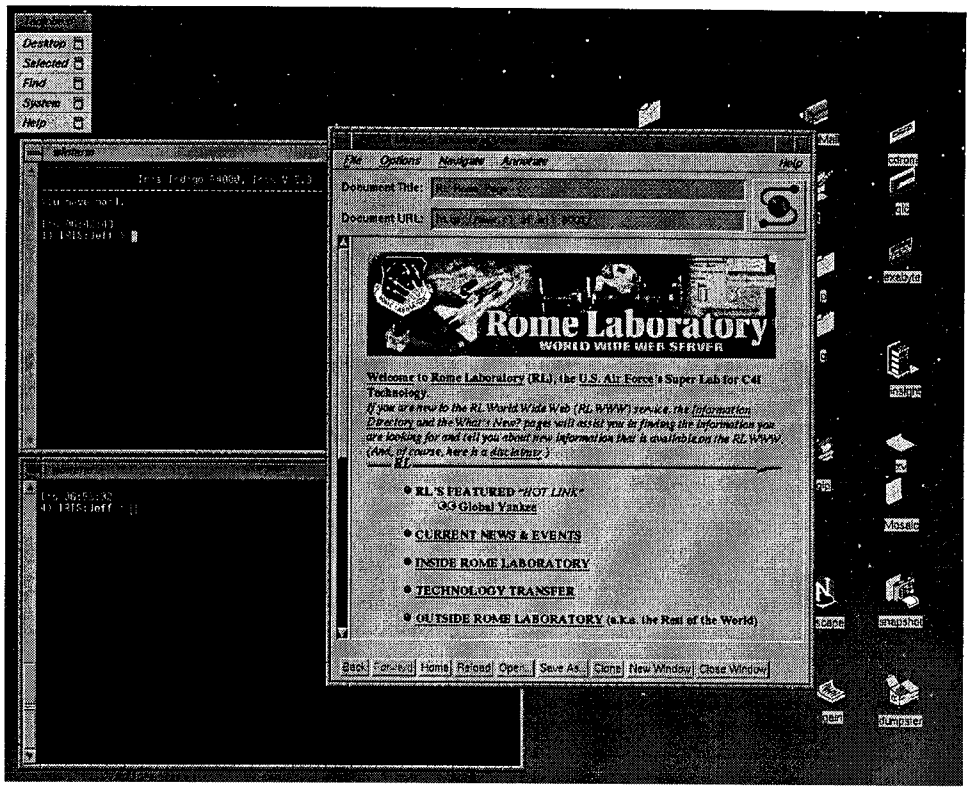

Figure 3-5. Mosaic on Indigo Magic Desktop

3.8 ABILITY TO JOIN/EXIT ONGOING PRESENTATIONS

A stand-alone conferencing tool was developed to allow other nodes to join ongoing presentations or to exit the conference when their portion of the presentation had been completed. This tool was written with the Gain Momentum Gain Extension Language (GEL) software. This allows the conferenceing tool to be ported to other types of workstations that support Gain Momentum without modification. Other nodes can view the demonstration on a non-interactive basis. The built-in video boards in the Indys allow exporting the basic audio/video signals which could be viewed on any TV monitor.

3.9 OPERATION EVALUATION

During the operational evaluation period, three nodes were located and operated in Building 240 (IR Directorate). Following leased hardware installation and training of Rome Lab users, DSA provided a demonstration of the capabilities using all 3 nodes. The demonstration exhibited the basic functionality of the prototype, which allowed the Government users to see the prototype's capabilities and develop implementations to showcase their respective products. DSA Rome provided on-site support to train and assist Government users in getting the maximum benefit during the evaluation period. This help entailed creating multimedia briefings using the Gain Momentum and InPerson software tools.

4. USER MANUAL TO SET UP/CONDUCT AN I-IMPRESS SESSION

The Gain Momentum Briefing System, constructed for I-IMPRESS, is a system designed to facilitate synchronized briefings on any number of UNIX platforms or Windows NT based PCs. A

briefing is created in the Gain Momentum Application Editor and is then either sent to all briefing participants or stored in the library. The briefing is then shown in the Briefing Tool, another Gain Momentum application which handles all communication between the person giving the briefing and all other briefing participants in other locations. Each Briefing Tool that is run communicates with other Briefing Tools through a server. The server acts as a mediator between all running Briefing Tools and keeps track of the state of the briefing; such as current page and who currently has the chalk. This allows someone to join a briefing in-progress and synchronize up to the point that the briefing has commenced.

The construction and execution of an I-IMPRESS session is a straightforward process that is outlined below. One of the I-IMPRESS nodes would be identified as the administrative node from which the demonstration would be assembled and started. This is not necessarily the node that the audience would be viewing.

4.1 SELECT TOPICS TO BE INCLUDED IN THE SESSION

Identify Technology/Products to be showcased: This step is one that all will define who will be a participant in the conference. The information that is to be presented will depend on the target audience and will need to be rethought on a case-by-case basis. Along with identifying the information, the order of presentation should be defined to best showcase it.

Identify Participants: Prior to conducting a conference all of the participants should be identified and notified of the date and time the conference will be run. Also the participants should be given a list of all of the participants and the order of the presentations to allow for smooth transition between briefers. This will give the participants the opportunity to develop and refine their presentation of the technology/product for the conference.

4.2 CREATE DEMONSTRATION BRIEFINGS USING GAIN MOMENTUM

The I-IMPRESS briefings are constructed using the Gain Momentum Application Editor. The Editor is started by first selecting the application to edit and then selecting the Application Editor item from the Gain Momentum View menu. Training is available in the Gain Momentum tool by selecting Training from the Help menu. A series of lessons demonstrates the full range of Gain Momentum features.

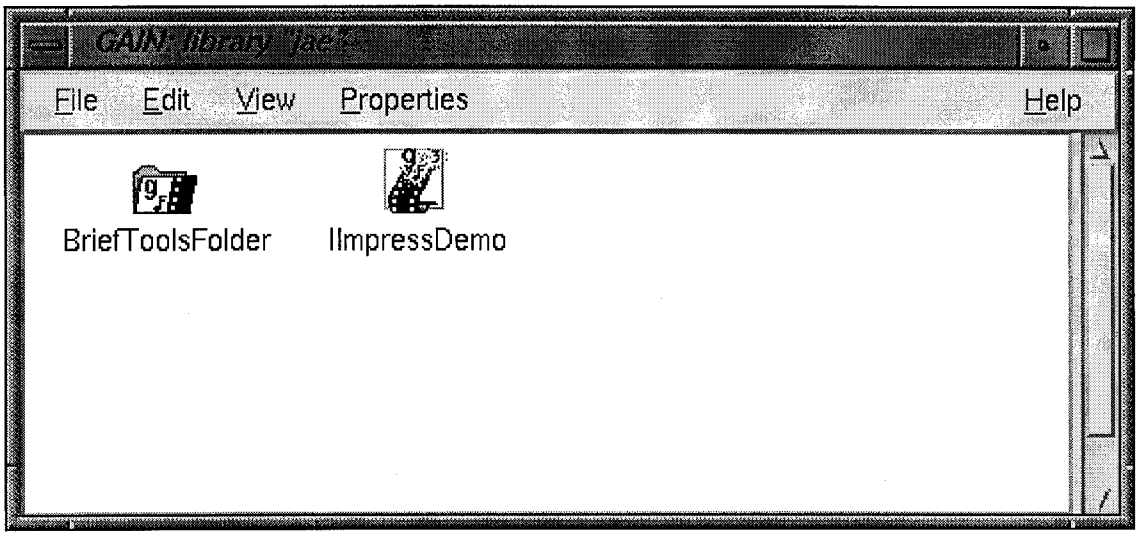

Figure 4-1. GAIN Momentum Main Screen

The Gain Momentum Application Editor, used to create a briefing, is shown in the following figure. Consult the Gain Momentum Users Guide or click on Help in any of the Gain tools to obtain instruction on the Application Editor.

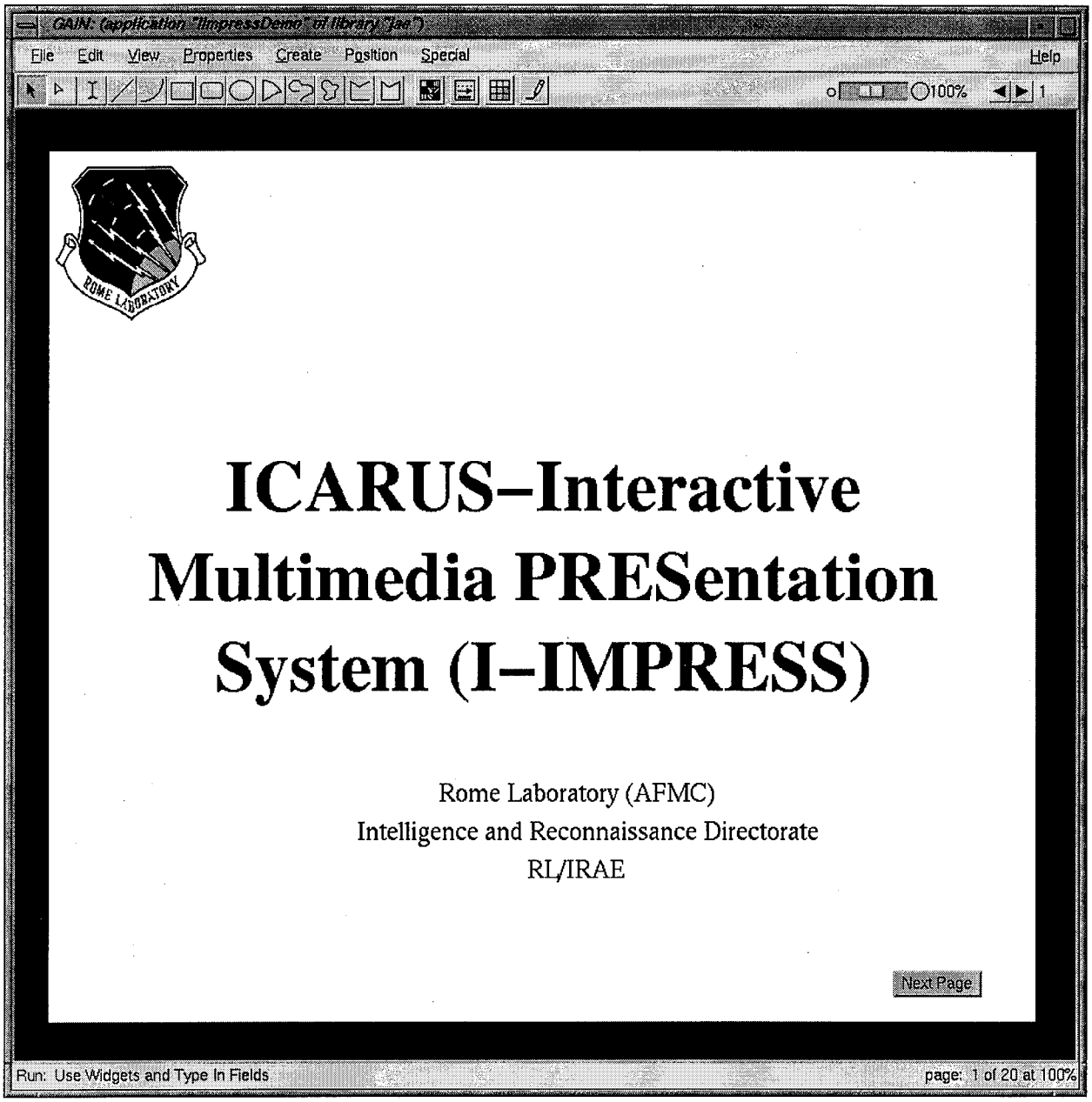

Figure 4-2. GAIN Momentum Application Editor with Example Application

A briefing can be built based on a previous Gain Momentum briefing by first opening the briefing in the Application Editor and then using the Save As option under the File menu to generate a briefing with a new name. The new briefing can then be edited by deleting and changing pages from the old briefing as well as adding new material not in the original. This process alleviates the need for manually setting the page sizes, backgrounds and connecting to the briefing, conference and participants tool developed for this effort.

Several different Gain Momentum briefings can be incorporated into a single Master Demonstration by having each technology area develop its own briefing and then passing the completed briefing to the Demonstration System Administrator for insertion into the Master Demonstration. Gain

Momentum has standard cutting and pasting tools for moving pages and objects within and between briefings.

Materials from other briefing tools (Powerpoint, CorelDraw, etc.) can be included in the Gain Momentum briefing by saving the material in TIFF files and importing as a picture directly into the Gain Momentum briefing. Alternately the text from these other tools, when saved as an ASCII text file, can be imported into a Gain Momentum text object and be manipulated as a Gain Momentum object. The graphics can either be recreated with the application editor's drawing tools or, as stated above, by importing them in the form of a TIFF file.

When the briefing is fully constructed, these steps should be followed to set up the briefing to run in the I-IMPRESS Briefing Tool:

1) Load the briefing into the Application Editor.

2) Select Properties > User Properties... (a User Properties window will appear).

3) On the selection button next to the label Object: choose Selected Application.

4) Scroll through the properties list and locate the property called createTool and click on it. If createTool does not exist, type it into the Property text field.

5) In the Value list, click the mouse and then type BRIEFING-TOOL (use dash, not the under bar in between).

6) Click on the Apply button.

7) Save the briefing.

If the briefing needs to be edited after the above steps have been taken, this can be done by selecting the briefing and then selecting View > Application Editor in the folder window main menu.

4.3 DISTRIBUTE INTEGRATED BRIEFING

When the briefing has been fully assembled and attached to the Briefing Tool outlined in the above steps, a copy of it needs to be installed on all participating nodes on the network. The briefing is distributed by exporting it to an ASCII text file in the Gain Interchange Format. This text file can then be passed to the other nodes via ftp and imported into each node's Gain Momentum library. This is accomplished by the Demonstration System Administrator as follows:

1) Start Gain Momentum and select the briefing in the Gain Library window.

2) Select File > Export... (a file export window will appear).

3) Select the desired directory and enter an appropriate name of the form *.if. This stands for the Gain Interchange Format.

4) ftp the resulting file to the other participating nodes on the network.

5) On the other nodes: Start Gain Momentum and select File > Import... (a file import window will appear).

6) Select the file that was sent from the master briefing machine and then select Import.

4.4 BRIEFING/DEMONSTRATION CONDUCT

The I-IMPRESS distributed briefing is controlled by a server running on one of the participating nodes. The server passes all messages to the participating nodes and receives messages from the nodes.

The server is called *gmserver* and is loaded into the Gain home directory. If it is not on the machine that is desired to be the server it can be copied to any other participating node. To run the server, type *gmserver*. The server should run with no problems. If an error is encountered, try running the server with a different socket port. The syntax is:

gmserver -port XXXX

where XXXX is the port number. If the port parameter is omitted, the default port is 2001. If another port is desired, use port numbers above 2001 and below 3000.

After the server is running and the port number being used by the server is known the user must then set up the user environments for each of the clients where Gain Momentum will be displaying the briefing. There are two environment variables to set, as follows:

GAIN_SERVER_HOST	This is the host machine where the server will be running.
GAIN_SERVER_PORT	This is the port number 2001, or the number specified in the port parameter when starting the server.

Set these variables in the **.cshrc** file in the home directory of the user who will be running Gain Momentum and the briefing as follows:

setenv GAIN_SERVER_HOST=hostname

setenv GAIN_SERVER_PORT=XXXX

If these are not in the environment the user will be prompted for them when starting up a briefing. When these settings are complete, the I-IMPRESS briefing can be started.

To start the briefing at each of the nodes, the user at the nodes needs to double click on the application icon in the Gain Momentum library window. On successfully starting the briefing, a Conference Tool window will appear, and the briefing also appears in a Briefing Tool window as shown in the following figures.

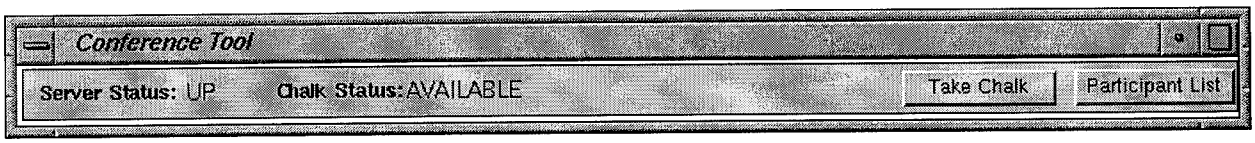

Figure 4-3. I-IMPRESS Conference Tool

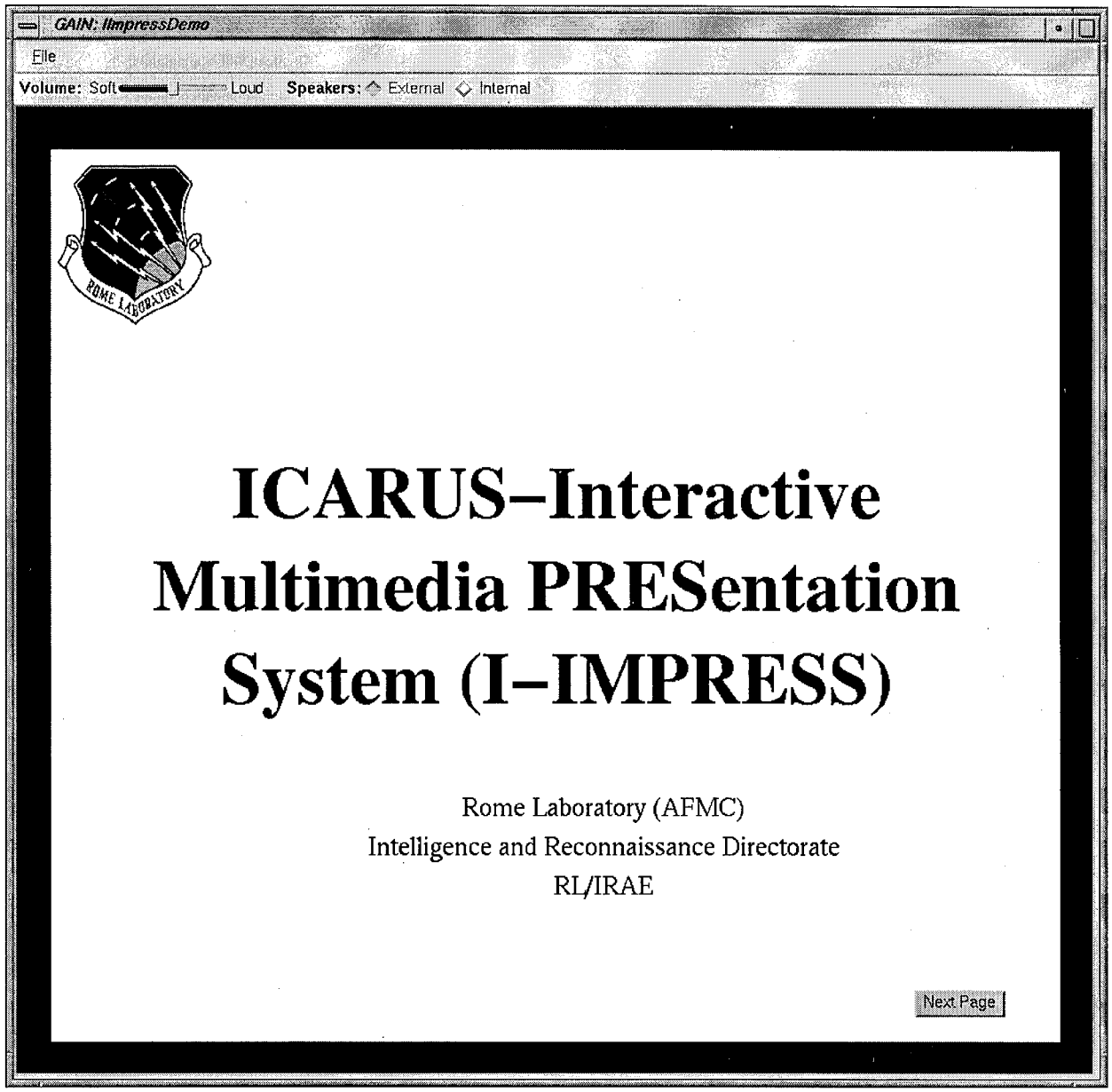

Figure 4-4. I-IMPRESS Briefing Tool

As new users enter the briefing those that have already started the briefing will receive a notice via a message box that "user@machine" has joined the conference. The local user need only acknowledge them by selecting the OK button.

The conference tool shown in the above figure has three functions. The first is to notify the user of the status of the server, **Server Status.** This indicator will either read UP or DOWN signifying the state of the server. If the server is down the distributed briefing cannot take place and the server should be restarted or connections to the machine running the server should be checked. The **Chalk Status** provides a visual notice of whether the chalk is available for taking or who has the chalk. The name of the user and host that has the chalk will be displayed here. The **Take Chalk** button is a toggle button. When it is clicked on it will change its label to Release Chalk, and back to Take Chalk again on the next

click. This button is "grayed out" when someone else has the chalk or the server has failed and cannot be clicked on when it is in the "grayed out" state. The other button, labeled **Participant List**, when clicked on will open the window shown in the following figure:

The briefing window contains the compiled briefing put together and distributed by the briefing administrator. The File menu in the briefing is used to exit the briefing. The View menu in the briefing window is an alternate method to change to different pages in the briefing. There are menu items to go to the next page, previous page, first page, last page and a user selectable page number.

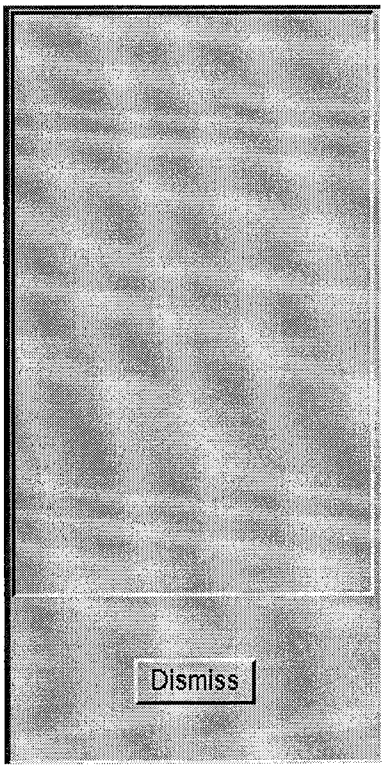

Figure 4-5. I-IMPRESS Conference Participants Window

All participants in a briefing will appear in this window. As participants enter or leave the briefing, they will be added to or deleted from the above list. When the list is no longer needed, click on the Dismiss button.

The person with the chalk determines the pace within his/her briefing. Other participants need to respect this control. Control will then pass with the chalk.

At the conclusion of the briefing/demonstration the presentation system at each node is stopped by selecting the *File* > *Quit* item in the briefing window. As users leave the briefing those that are still in the briefing will receive a notice via a message box that "user@machine" has left the conference. The local user need only acknowledge them by selecting the OK button.

5. SOFTWARE AND HARDWARE ANALYSIS, LESSONS LEARNED

Extensive use of COTS software kept the development cost of I-IMPRESS down and has allowed the development and implementation of a number of system capabilities which represent

upgraded capabilities from the C2 VIEW predecessor. The Gain Momentum software allowed the inclusion of:

- Real time database access
- Video and Audio
- Platform independent presentation nodes
- Video and Audio incorporation into the presentation

At the start of the effort a trade off analysis of Showcase versus Gain Momentum was performed. Showcase was the presentation COTS package used for the C2 View prototype. The following table outlines the pros and cons of both systems. From this analysis Gain Momentum was chosen.

	Showcase (Slide Show)	**Gain Momentum (Application Builder)**
Pros	• Free on SGI machines • DSA Version runs across network • Easy to understand user interface • Incorporates all multimedia elements (text, images, audio, hyperlinks)	• Platform Independent (SGI, SUN, HP, Windows NT) Binary Independencies • Very Extensible • Network aware (its own brand or UNIX Sockets) • SQL interface • "Objectivity" database • GEL Gain Extension Language • Object Oriented Scripting Language • Animation • Runs on a set-top-box
Cons	• Only SGI • No animation (crude at best) • Page based architecture • Single path though the demo • No true interactive interface (i.e., menus) • Simple Multimedia Tool	• Cost $10K for a builder license, $395 for a runtime license • Harder to learn by the demo builder

During the operational evaluation period it was noted that the InPerson/Indy Audio capabilities required a significant amount of adjustment to obtain a desirable volume level without generating feedback into the microphone. A near term solution is to require the user to wear the microphone (lapel microphone) or use a more directional microphone to avoid the feedback issue.

6. FUTURE DIRECTIONS, RECOMMENDATIONS FOR I-IMPRESS EFFORTS

One area that warrants further investigation in the distributed video teleconferencing/presentation arena is the high speed transmission of video within the presentation and of the presentation participants. Currently the in-presentation video is preloaded on all of the presentation nodes so it is running locally to each node. This reduces the load on the network; however,

it requires significant amounts of hard disk space on each node. Also the audio and video provided by the InPerson Video Teleconferencing tool is of low quality.

During the development of the I–IMPRESS capability an on-line search of the World Wide Web was undertaken to identify new products and sites addressing video teleconferencing. Below are two very good sites that can be used as launching points in reviewing the state of the art in video teleconferencing on line. The contents of the second site have been included in Appendix B and does not reflect the opinions of the authors of this report.

- http://fiddle.ee.vt.edu/succeed/videoconf.html
- http://www2.ncsu.edu/eos/service/ece/project/succeed_info/dtvc_survey/products.html

7. REFERENCES

* 1) ROME LABORATORY FACILITIES REGISTER, RL-TR-93-91, In-House Report, S. Grudzinski, April 1993.

2) IIPF Expert System Experiments (IIPLESE) Technical Information Report Test Plan, Inventory and Configuration Management to Support Unclassified IIPLESE Testing, S. Barth, PRC, Inc., and J. Penatzer, Sterling Inc., Contract # F30602-91-C-0109 Report, 30 Jul, 1993.

3) Gain Momentum Users Guide, SYBASE, 1994.

4) Gain Momentum Developer's Guide to GEL, SYBASE, 1994.

*Although this report references the limited document noted above, no limited information has been extracted. Distribution authorized to USGO Agencies and their contractors; administrative/operational use.

Appendix A: I-IMPRESS Site Survey Questions and Worksheets

What ICARUS Lab/other IR labs software applications need to be executed remotely?

Are these standard X-Windows applications, or do some use other graphic systems calls such as GL?

Are there any known problems executing any of these applications across a network?

Are there GUI guidelines or a GUI environment/framework we need to comply with?

Are multimedia presentations to be conducted or shared on other hardware besides the three Indys we are supplying?

If so, are they also SGI platforms?

What version of the OS are the other SGI platforms running?

If not 5.2, can they upgrade?

What non-SGI platforms NEED to be used, and what OS are they running?

Multimedia presentations consisting of video and audio often need to monopolize networks when using the standard TCP/IP protocol (which SGI must use). What network bandwidth can be expected to be available?

Is there a desire to use *smart* applications that monitor and adjust for network congestion, e.g., reduce video frame rate or audio bandwidth relative to congestion?

What type of animation is desired/required as part of the multimedia presentations -- none, wipe effects between scenes, simple 2-D along a path, interactive 3-D?

Is Gain Momentum (SYBASE) in use by any of our users?

If so, what do they think of it?

If not, or they don't like it, Chad would like to conduct demonstrations of its capabilities.

What databases, if any, need to be accessed in real time?

Would the interface be SQL or custom?

I-IMPRESS Site Survey Facility/Lab Worksheet

Facility/Lab:

Purpose:

Location:

Network Connection: ☐ No ☒ Yes

☒ Ethernet

☐ FDDI

☐ T1 Connection

☐ Other:

Network Protocol:

Internet Connection: ☐ No ☒ Yes:

POC: **Phone:**

Alt. POC: **Phone:**

I-IMPRESS Site Survey System Worksheet

Location:

Manufacturer:

Model:

Operating System:

Purpose:

Disk Drives:	Floppy	#:	Capacity:
	Fixed	#:	Capacity:
CD-ROM Drives:	☒ No	☐ Yes:	
Tape Drives:	☐ No	☒ Yes:	
Other I/O Devices:	Video Camera: Scanner: Printer(s):		
Network Connectivity:	☐ No	☒ Yes:	
Network Protocol:			

Other Application Software:

POC:	**Phone:**
Alt. POC:	**Phone:**

Appendix B: WWW Desktop Videoconferencing Products Search Results

This is an index of desktop videoconferencing products surveyed. This list is designed to aid in comparing the many different systems based on several key features. These systems may have additional features that are not mentioned here.

- AT&T GIS Vistium 1300
- AT&T GIS Vistium 1200
- Avistar Conference
- BeingThere
- BVCS (Bitfield Video Communication System)
- C-Phone
- Cameo Personal Video System
- CommunicatorIII
- Communique!
- Connect 918
- CU-SeeMe
- Eris Personal Video Communications System
- ES+F2F (Electronic Studio's Face 2 Face)
- ICU Video Services
- InPerson
- Interact
- INTERVu
- InVision
- IVS (INRIA Videoconferencing System)
- Mediafone/Fonewatch
- Meet-Me
- MINX
- MMC (MultiMedia Collaboration)
- Ntv
- nv (Network Video)
- Person To Person
- Personal Viewpoint
- PICFON
- PictureTel Live PCS 100
- PictureTel Live PCS 50
- PictureTel LiveLAN
- PictureWindow
- ProShare Video System 150
- ProShare Video System 200
- PSVC (Paradise Software Video Conferencing)
- ShareVision Mac 3000
- ShareVision PC 3000
- ShowMe
- TelePro

- TeleView 1000C
- VC8000
- VicPhone
- VidCall
- VideoVu
- VISIT
- Vivo320
- VS1000

AT&T Vistium(tm) 1300

Version: 1.04.xx
Provider: AT&T Global Information Solutions
Description: Video / Audio/ Collaboration Tools.
Platforms: PC (ISA)
Requirements: 386/25 or higher, 8MB RAM, VGA with VESA feature connector, Microsoft Windows 3.1+, two adjacent ISA slots (+ third slot for network interface board - except 8510 models).
ISDN models provide "S/T" interface, require external NT1 for ISDN "U".
Price: ~$4995 including camera, AV connectors, Share Software and network interface.
Contact Info: AT&T Global Information Solutions, 1700 S. Patterson Blvd., Dayton OH, 45479-0001, USA, phone: +1.513.445.5000, toll free: 1-800-225-5627.
LAN Protocols:
Audio Encoding: G.728, G.711
Video Encoding: H.261 (QCIF,CIF)
Interoperability Standard Support: H.320
Multipoint: Yes (application sharing point-to-point only - See Note).
Collaboration Features: Whiteboard, Application Sharing of Windows applications, File transfer, JPEG Image capture:
Notes: AT&T Microelectrinics AVP Codec Chip-set: Hardware assisted Encode & Decode
Available Network Interfaces:
V-BRI PC ISDN Board (National ISDN 1 (5ESS(r) / DMS) or AT&T Custom ISDN
8510T ISDN Set (AT&T Custom ISDN - 5ESS or Definity(r))
Dual Switched-56 PC Board (4-wire internal DSUs)
Dual Switched-56 PC Board (2-wire internal DSUs)
Dual V.35 / RS-366 PC Board (Requires external DSUs or I-MUX)
(Version 2.0 adds T.120 and Multipoint Data Collaboration)
Survey Info Updated: 04-May-95

AT&T Vistium(tm) 1200

Version: 1.04.xx
Provider: AT&T Global Information Solutions
Description: Video / Audio / Collaboration Tools.

Platforms: PC (ISA)
Requirements: 486/66 or Pentium(tm), 8MB RAM, VGA with VESA feature connector, Microsoft Windows 3.1+ single ISA slot (+ second slot for V-BRI ISDN interface - not required for 8510 models). Provides ISDN "S/T" interface, requires external NT1 for ISDN "U".
Price: ~$2700 including camera and ISDN S/T interface.
Contact Info: AT&T Global Information Solutions, 1700 S. Patterson Blvd., Dayton OH, 45479-0001, USA, phone: +1.513.445.5000, toll free: 1-800-225-5627.
LAN Protocols:
Audio Encoding: G.728, G.711
Video Encoding: H.261 (QCIF,CIF)
Interoperability Standard Support: H.320
Multipoint: Yes (application sharing point-to-point only - See Note).
Collaboration Features: Whiteboard, Application Sharing of Windows applications, File transfer, JPEG Image capture: - See Note
Notes:
AT&T Microelectronics AVP-II Codec: Hardware assisted Encode, Software Decode
Available Network Interfaces:
V-BRI PC ISDN Board (National ISDN 1 (5ESS(r) / DMS) or AT&T Custom ISDN
8510T ISDN Set (AT&T Custom ISDN - 5ESS or Definity(r))
(Version 2.0 adds T.120 and Multipoint Data Collaboration)
Survey Info Updated: 04-May-95

Avistar Conference

Provider: Avistar
Description: client/server solution for desktop videoconferencing over LANS.
Platforms: PC, Mac, Sun
Requirements:
Price:
Contact Info: Avistar Systems, 555 Hamilton Avenue, Palo Alto CA 94301, USA, +1.415.617.1350, fax: +1.415.617.1351, info@avistar.com.
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: Up to 4 simultaneous participants.
Collaboration Features: Shared window with annotation capability.
Notes:
Survey Info Updated: 29-June-95

BeingThere

Version: 2.0

Provider: Intelligence at Large
Description: Video/Audio/Tools over LAN (Ethernet, Token Ring, LocalTalk) and WAN (analog dial-up, ISDN and other switched/dedicated digital telephone lines).
Platforms: Mac
Requirements: Mac 68040 or Power Mac, Mac OS 7.1 or later, 8 MB RAM, 3.5 MB disk space, QuickTime video capture, video input (S-VHS, NTSC, PAL, SECAM), audio input. ISDN use requires an ISDN card and BRI ISDN service (2 B channels), Modem use requires 28.8 kbps for audio, video and collaboration (9.6 kbps sufficient for collaboration only).
Price: $299 for Standard, $599 for PRO, $149 for Starter kit, includes 2 Versions of Standard. Limit 1 Starter Kit per site.
Contact Info: Intelligence at Large, Inc., 3508 Market Street, Suite 230, Philadelphia, PA 19104, USA, phone: +1.215.387.6002, 1-800-425-7638, fax: +1.215.387.9215, info@beingthere.com.
LAN Protocols: Appletalk and ARA, TCP/IP.
Audio Encoding: QuickTime
Video Encoding: Quicktime, National Semiconductor Video Codec
Interoperability Standard Support:
Multipoint: Yes (Pro Version), 4 with sound/video; 10 collaboration only. ISDN and modem are point to point only.
Collaboration Features: Full document window sharing, real-time updates of shared documents, whiteboard, drag and drop interface for file transer, file and clipboard transfer, object based whiteboard mark-up tools.
Notes: Free upgrade to QuickTime Conferencing compatibility from Apple Computer will be available soon after QuickTime Conferencing ships. Free demonstration Version available via FTP. Send an email request to info@beingthere.com.
Survey Info Updated: 06-June-95

BVCS (Bitfield Video Communication System)

Version: 2.1
Provider: Bitfield Oy
Description: Video/Audio over ISDN (single/multi BRI, PRI), LAN (TCP/IP, NetBIOS), T1/E1 and other networks.
Platforms: PC
Requirements: Microsoft Windows 3.1+, video overlay board or external monitor.
Price:
Contact Info: info@bitfield.fi, phone: +358-0-5024 220, fax: +358-0-455 2240, Bitfield Oy, Ukonvaaja 2, 02130 Espoo, Finland.
LAN Protocols: TCP/IP, NetBIOS
Audio Encoding: G.711, G.722, G.728
Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint: Yes
Collaboration Features:
Notes:
Survey Info Updated: 08-Mar-95

C-Phone

Provider: Twincom
Description: Windows Desktop Video Conferencing System over LAN, ISDN, fractional T1, V.35, or Switched-56 digital lines.
Platforms: PC
Requirements: Windows 3.1+, 386SX or higher, 4MB RAM, VGA or better display, graphics board with feature connector.
Price: $1,995 (for LAN user), includes SONY video camera and Primo microphone.
Contact Info: Twincom, Wilmington NC, USA, +1.910.395.6100.
LAN Protocols:
Audio Encoding: G.711, G.722, G.725, G.728
Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint: Yes (maximum of 6 participants, can only display image of user and one other participant). The C-Phone Multi-Point Controller (available from Target Technologies, toll free: 1-800-666-2496) add on will allow up to 4 participants to have a multipoint conference ($3995).
Collaboration Features: File transfer (WAN to LAN), document camera (optional), and video playback.
Notes: Software can image capture and record full-motion video and audio. Bandwidth: 56k to 384k bits per second. Can achieve up to 30 frames per second within LAN.
Survey Info Updated: 08-Mar-95

Cameo Personal Video System

Provider: Compression Labs Inc.
Description: Video over Switched 56, ISDN, and Ethernet. Audio requires separate ISDN or Analog phone line.
Platforms: Macintosh
Requirements: System 7 or higher, QuickTime, ISDN card for ISDN use, video card (RasterOps 24STV, 24LTV), Analog telephone or speakerphone.
Price: $1595 without camera, $2095 with camera.
Contact Info: Compression Labs Inc., 2860 Junction Ave., San Jose CA, 95134, USA, phone: +1.408.435.3000, toll free: 1-800-CALL-CLI.
LAN Protocols:
Audio Encoding: Proprietary CLI PV2 compression algorithm
Video Encoding: Proprietary CLI PV2 compression algorithm
Interoperability Standard Support:
Multipoint: No
Collaboration Features: File Transfer.
Notes:
Survey Info Updated:

CommunicatorIII

Version: 3.0
Provider: EyeTel Communications Inc.
Description: Video/Audio/Tools over Switched 56, ISDN, T1, Ethernet, or Token Ring.
Platforms: PC
Requirements: Novell Netware 3.11+, 386SX or higher, 4 MB RAM, Super VGA w/256 colors and feature connector, Microsoft Windows 3.1+, audio input/output, 5 MB hard disk space.
Price: $6995, includes camera, microphone, speakers, CODEC and video capture board. Optional motion estimation board $995.
Contact Info: EyeTel Communications Inc., #206 - 267 W. Esplanade, N. Vancouver, B.C., Canada, V7M1A5, phone: +1.604.984.2522, toll free: 1-800-736-3236, fax: +1.604.984.3566.
LAN Protocols: NetBIOS, TCP/IP, IPX.
Audio Encoding:G.711, G.722, G.728
Video Encoding:H.261
Interoperability Standard Support: H.320
Multipoint: Yes
Collaboration Features: Whiteboard, File transfer.
Notes:
Survey Info Updated:

Communique!

Provider: InSoft
Description: Video/Audio/Tools over ISDN, Frame relay, FDDI, SMDS, Ethernet, ATM.
Platforms:

Sun	SunOS 4.1.3, 4.1.4
Sun	Solaris 2.3, 2.4
HP	HP-UX 9.0.3, 9.0.5, 10.0
IBM	AIX 3.2.5, 4.1.1
DEC	OSF/1, OSF/2, OSF/3
SGI	IRIX 5.3
Intel PC	Windows 3.1, 3.11

Requirements: Video card and camera.
Price: $995
Contact Info: InSoft, 4718 Old Gettysburg Rd. #307, Mechanicsburg PA, 17055, USA, phone: +1.717.730.9501, info@insoft.com.
LAN Protocols: TCP/IP
Audio Encoding:
Video Encoding: CellB, JPEG, Indeo.
Interoperability Standard Support:
Multipoint: Yes
Collaboration Features: Shared Whiteboard,Shared Applications, Shared Writeboard, File Transfer, Groupware Tools.

Notes: H.261, G.711 planned in future Versions. Upon official release of Windows NT 3.51, Communique! will be available for NT both on Intel and Alpha based PC's.
Survey Info Updated: 30-May-1995

Connect 918

Provider: Nuts Technologies
Description: Video/Audio/Tools over Analog, Switched 56, ISDN, or Ethernet.
Platforms: Mac
Requirements:
Price: $3000-$5000 depending on ISDN or LAN options.
Contact Info: Nuts Technologies, 2374 Walsh Ave., Santa Clara CA, 95051 USA, phone: +1.408.980.7800, Applelink: NUTS.USA.
LAN Protocols:
Audio Encoding: G.711, G.722, G.728
Video Encoding: H.261
Interoperability Standard Support:H.320
Multipoint: No
Collaboration Features: Whiteboard, Screen sharing.
Notes: Reported not to be fully H.320 compliant yet (though product literature claims they are). PC Version in the works.
Survey Info Updated: 26-Apr-95

CU-SeeMe

Version: 0.80 (Macintosh), 0.65 (PC).
Provider: Cornell University
Description: Video/Audio over the Internet. (PC Version is receive-only for the audio).
Platforms: Macintosh, PC.
Requirements: Video camera. Mac: 68020 or higher, System 7 or higher, 16-level-grayscale display, MacTCP, video hardware (Video Spigot hardware or AV Mac), audio hardware, Quicktime. PC: 386DX or higher, Microsoft Windows 3.1+, Windows Sockets compliant TCP/IP, 8 bit video driver, video hardware supporting Microsoft Video For Windows.
Price: Free, by anonymous ftp from ftp://gated.cornell.edu/pub/CU-SeeMe/.
Contact Info: Dick Cogger, R.Cogger@cornell.edu, phone: +1.607.255.7566.
LAN Protocols: UDP/IP, IP Multicast.
Audio Encoding:
Video Encoding: Non-standard
Interoperability Standard Support:
Multipoint: Yes, using Unix reflector software.
Collaboration Features: None
Notes:
Survey Info Updated: 27-June-95

Eris Personal Video Communications System

Provider: RSI Systems Incorporated
Description: Video/Audio/Tools over ISDN or analog phone lines.
Platforms: PC, Mac
Requirements: PC running Windows 3.1 or later / Macintosh running System 7.0 or later.
Price: $4495 includes desktop unit (with built in 28,800 baud V.34 modem and an integrated speakerphone), color video camera, cables, software and documentation.
Contact Info: RSI Systems Incorporated, One Corporate Plaza, 7400 Metro Blvd., Suite 475, Edina, MN, 55439 USA, +1.612.896.3020, toll free: 1-800-496-4304, fax: +1.612.896.3030.
LAN Protocols: N/A
Audio Encoding: G.728, G.711, G.722
Video Encoding: H.261 (QCIF,CIF)
Interoperability Standard Support: H.320
Multipoint: will support AT&T's WorldWorx standard.
Collaboration Features: Real-time sharing of any document window and file transfer capability.
Notes: Eris is a self-contained SCSI or PCMCIA peripheral (requires no board installation). It can be easily moved between systems.
Survey Info Updated: 08-June-95

ES+F2F (Electronic Studio's Face 2 Face)

Version: 1.0
Provider: Electronic Studio
Description: Video/Tools over ISDN, Analog, Ethernet. Audio requires ISDN or Analog phone line.
Platforms: Macintosh
Requirements: Apple Communications Toolbox, video capture board.
Price: $995 video, $995 text and image exchange, $1495 both.
Contact Info: The Electronic Studio, 7 Fitzroy Square, London, W1P 6HJ, Great Britain, phone: +1.408.974.0784, toll free: 1-800-377-8681.
LAN Protocols: Appletalk
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: No
Collaboration Features: Text and image exchange.
Notes:
Survey Info Updated:

ICU Video Services

Version: 2.0.6
Provider: Uni-Data and Communications, Inc.
Description: Audio/Video/Tools over LAN/WAN.
Platforms: PC, SUN, DEC
Requirements: TCP/IP LAN and/or WAN for call setup. Cat 3 UTP for video within a premise; ISDN, SW56, ATM or private circuits for video transmission between premises. Motif (Solaris/Ultrix) or Windows 3.1 with Winsock-compliant TCP/IP.
Price:
Contact Info: 65-11, 174th Street, Flushing, NY 11365, USA, phone: +1-718-445-5600, fax: +1-718-445-5604; 2/9, Mason's Avenue, London, EC2V 5BT, England, phone: +44-171-600-4124, fax: +44-171-600-5412.
LAN Protocols: TCP/IP
Audio Encoding:
Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint: 4-,9-,16-way viewing with all participants simultaneously displayed and audible.
Collaboration Features: White Pages, On-Line directory services, text messaging, frame grabbing.
Notes: TV-quality desktop and room video conferencing and broadcast distribution over unshielded twisted pair up to 300 meters within a premise and via WAN between premises. No impact on LAN throughput. Works with any analog video camera or monitor/video board. Non-clocking video switch guarantees that every call will complete successfully. Complete call control from every desktop. Feature set includes: caller ID, call roaming, speed dialling, detailed billing and usage reports. Operable within a single premise or throughout a global enterprise. Distributed architecture allows for multiple video switches to be interlinked to provide end-to-end calling capability from any desktop. Can distribute VCR, CATV, broadcast TV, stored video.
Survey Info Updated: 14-May-95

InPerson

Provider: Silicon Graphics
Version: 2.0 (April 1995)
Description: Video/Audio/Tools over ISDN, T1, Ethernet, FDDI. A conference includes a shared whiteboard and a "shared shelf" for visual file transfer.
Platforms: InPerson runs on any SGI platform with graphics. The SGI Indy comes bundled with all the audio/video hardware/software you need. For machines without video hardware, a static image is used instead of live video. For machines without audio hardware, the InPerson whiteboard can be used with an analog phone line for voice.
The InPerson whiteboard is available on Windows from NetManage (+1-408-973-7171, sales@netmanage.com).
Internezzo Technologies (+1.415.561.5171) plans to provide InPerson on Suns and HPs by Dec. 1995.
Requirements: IRIX 5.3 system software. No additional hardware needed on Indy.
Price: $495 U.S. list
Contact Info: US toll free: 1-800-800-7441, inperson@sgi.com
More info and evaluation copy available from www.sgi.com.

LAN Protocols: Audio and video data is sent using UDP/IP. IP multicast is used for all conferences with more than two participants. The whiteboard uses TCP/IP.
Audio Encoding: InPerson supports several standard audio compression formats:

Intel/IMA DVI ADPCM	16 kHz	64 kbps(default)
Intel/IMA DVI ADPCM	8 kHz	32 kbps
CCITT/ITU-T G.711u-law PCM	8 kHz	64 kbps
GSM 06.10 RTE/LTP	8 kHz	13 kbps
uncompressed mono	44.1 kHz	706 kbps
CCITT/ITU-T G.728	8 kHz	16 kbps with optional hardware

Video Encoding: H.261, RGB8, HDCC (video compression algorithm developed at SGI)
Interoperability Standard Support:
Multipoint: Yes
Collaboration Features: Text, image, 3D model sharing. Whiteboard can include graphics, as well as text and images. Whiteboard in Version 2.0 supports sharing 3D models among participants. InPerson also includes a "shared shelf" for visual file transfer between participants in a call.

InPerson is part of Silicon Graphics' MindShare(TM) collaborative environment. This environment includes:
- interactive discussion of text, images, 3D models.
- software tools for digital media capture, creation, edit and playback.
- interactive presentation and authoring tool.
- store and forward of digital media and 3D documents.
- 3D support among all collaboration tools.

Notes: Optional hardware board for Indy provides G.728 audio compression and acoustic echo cancellation. InPerson and MindShare are trademarks of SGI.
Survey Info Updated: 18-July-95

Interact

Provider: Applied Communication Concepts Inc.
Description: Windows Desktop Video Conferencing System over ISDN line or RS-449 interface.
Platforms: PC
Requirements: Windows 3.1+, Intel 386SX or higher based computer system, 4MB RAM, VGA or better display and graphics board.
Price: $5,995 includes variable-focus proprietary person and document camera with built in speakerphone/handset.
Contact Info: Applied Communication Concepts Inc., Research Traingle Park NC, USA, +1.919.549.0874.
LAN Protocols:
Audio Encoding: G.711, G.722, G.728
Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint: Yes (maximum of 8 participants, can only display up to two remote participants at a time).

Collaboration Features: Shared drawing areas, shared clipboards, file transfer, OLE links, document camera, video playback, and other collaborative tools.
Notes: This system allows remote control of others' cameras and can record full-motion audio/video broadcasts. Bandwidth: 56k to 128k bits per second. Frame speed: up to 15 frames per second.
Survey Info Updated:

INTERVu

Provider: Zydacron, Inc.
Description: Video/Audio/Data over IsoEthernet (802.9), ISDN, Switched 56, or V.35/RS366.
Platforms: PC
Requirements: 386 or higher, Microsoft Windows 3.1 or higher.
Price:
Contact Info: Zydacron, Inc., 670 Commercial St., Manchester NH, 03101, USA, phone: +1.603.647.1000.
LAN Protocols:
Audio Encoding: G.711u/a, G.722, G.725, G.728
Video Encoding: H.261 (QCIF,CIF)
Interoperability Standard Support: H.320
Multipoint: Yes
Collaboration Features: File Transfer, runs most collaborative software already on the market (i.e. talkshow, vis-a-vis, person to person, farsite, terminal, carbon copy, proshare, etc.)
Notes: Operates at fixed frame rates of 15fps @FCIF and 30fps @QCIF without sacrificing clarity. INTERVu is completely CPU independent. Future plans to come out with a multiplatform product capable of 20(fixed) fps @ Full CIF.
Survey Info Updated:

InVision

Version: 3.0
Provider: InVision Systems Corp.
Description: Video/Audio/Tools over LAN/WAN (including Ethernet, Token Ring, FDDI, Frame Relay, ATM, ISDN, etc.) Also V.32 or faster modem.
Platforms: PC
Requirements: 486/33 or faster, Microsoft Windows 3.1+, 8MB RAM, 3MB hard disk space, high density 3.5" disk drive, 256 color VGA or SVGA - local bus recommended, Windows-compatible mouse or pointing device, Wave compatible sound card, Video for Windows compatible compression board, camera and microphone.
Price: $595, includes software only.

Contact Info: InVision Systems Corp., 317 S. Main Mall, Suite 310, Tulsa OK, 74103, USA, toll free: 1-800-847-1662, phone: +1.918.584.7772, fax: +1.918.584.7775, Internet: info@invision.com, Compuserve: 72002,1677.
LAN Protocols: TCP/IP, IPX
Audio Encoding:
Video Encoding: DVI (ActionMedia II or MediaShare Mambo)
Interoperability Standard Support:
Multipoint: Video is point to point, document conferencing up to 12 users.
Collaboration Features: Includes VisionGraphics document sharing software which includes a whiteboard and supports OLE.
Notes: H.261, H.320, MPEG under development.
Survey Info Updated:

IVS (INRIA Videoconferencing System)

Version: 3.5
Provider: RODEO Project, INRIA Sophia Antipolis, France.
Description: Video/Audio over the Internet.
Platforms: Various Unix platforms (see Requirements section).
Requirements: A workstation with a 1, 4, 8 or 24 bit screen depth. Multi-host conferences require kernel support for multicast IP extensions (RFC 1112). Video frame grabbers supported are:

SPARC stations with Parallax, SunVideo, VideoPix and the new Vigrapix
Silicon Graphic stations with IndigoVideo, GalileoVideo and VinoVideo
PC/Linux with SCREENMACHINE II
DEC 5000 stations with VIDEOTX
DEC ALPHA stations without video capture
PC/FreeBSD2.0 stations without video capture.
HP stations with VideoLive

No special hardware apart from the workstation's build-in audio hardware is required for audio. Requires a camera compatible with the video board.
Price: Free, by anonymous ftp from ftp://zenon.inria.fr/rodeo/ivs.
Contact Info: Thierry Turletti, Thierry.Turletti@sophia.inria.fr.
LAN Protocols: UDP/IP, IP Multicast.
Audio Encoding: PCM, ADPCM, VADPCM
Video Encoding: H.261
Interoperability Standard Support:
Survey Info Updated: Multipoint: Yes
Collaboration Features: None
Notes:
Survey Info Updated: 28-May-95

Mediafone/Fonewatch

Provider: Fiber & Wireless
Description: Audio/Video/Tools over analog/digital phone lines and LAN/WANs. Audio can be sent over the same analog phone line with the proper modem (available from Fiber & Wireless).
Platforms: PC
Requirements: For desktop PC upgrade kit: 486DX-33MHz or higher, 4Mb RAM, 256k external cache, 12Mb hard disk space, high density floppy drive, 14,400bps or higher modem, camera.
Price:??? PC upgrade kit includes Mediafone/Fonewatch software, video capture and VGA board, feature connector and AV/VGA cable. Other configurations are available including a software only package, a complete portable system and a software only laptop kit.
Contact Info: Fiber & Wireless Inc., 2200 Amapola Court #102, Torrance, CA 90501, USA, phone: +1.310.787.7097, fax: +1.310.787.7099, Mediaphone: +1.310.787.1745.
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: LAN/WAN operation appears to support multipoint.
Collaboration Features: Whiteboard, application sharing.
Notes:
Survey Info Updated: 29-Mar-95.

Meet-Me

Version: 1.0
Provider: SAT usa/Sagem
Description: Video/Audio/Collaboration Tools over LAN (using ISO ethernet) or ISDN.
Platforms: Mac
Requirements: Mac AV or PowerMac AV (except 660AV and 6100AV). Provides ISDN "S/T" interface, requires NT1 for ISDN "U". 1 Nubus slot.
Price: ~$3000
Contact Info: SAT usa, 20370 Town Center Lane #255, Cupertino CA, 95014, USA, phone: +1.408.446.8690, fax: +1.408.446.9766.
LAN Protocols: AppleTalk
Audio Encoding: G.711 and G .728
Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint:
Collaboration Features: file transfer, shared whiteboard
Notes: Communications interfaces: ISDN (Both B ch.s and ISO ethernet.) H.320 codec with Planet ISDN daughterboard for 1 Nubus connection. ISDN (2B+D): 2x64kb/s or 2x56 kb/s. H.320 components for quicktime conferencing.
Survey Info Updated: 30-May-95

MINX

Provider: Datapoint Corp.
Description: Windows Desktop Video Conferencing System using Standard phone, ISDN, 56/64-T1/E1, or Switched-56 digital lines.
Platforms: PC
Requirements: Windows 3.+, Intel 386SX or higher based computer system, 4MB RAM, VGA or better display and graphics board.
Price: $5,000, microphone and camera included.
Contact Info: Datapoint Corp., San Antonio TX, USA, +1.210.593.7900, toll free: 1-800-334-9968.
LAN Protocols:
Audio Encoding: G.711, G.722, G.728
Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint: Yes (maximum of 54 parties, software automatically switches view to current speaker).
Collaboration Features: Shared drawing areas, file transfer, links to external applications, document camera, video playback, and supports addition of third-party tools.
Notes: Software automatically changes remote view to that of the current speaker. Software can image capture and record full-motion video and audio. Bandwidth: 56k to 2Meg bits per second. Frame speed: up to 30 frames per second.
Survey Info Updated:

MMC (MultiMedia Collaboration)

Provider:Technical University of Berlin and Hewlett Packard
Description:Video/Audio/Application Sharing over LAN
Platforms:HP9000/7xx (Sun, SGI, DEC, PCs and Apple Macintosh)
Requirements:HP9000/7xx, Parallax PowerVideo700 or Conference Cam, Camera, Headset, HP-UX 9.01 or above, MPower
Price:
Contact Info: Nicolai Leymann, Technical University of Berlin, nicolai@prz.tu-berlin.de
LAN Protocols:IP
Audio Encoding: G.711
Video Encoding: M-JPEG, H.261
Interoperability Standard Support:
Mulitpoint: Yes
Collaboration Features: Application Sharing
Notes:
Survey Info Updated: 10-OCT-95

Ntv

Provider: Peregrine Systems

Description: Video/Audio/Tools over Ethernet and Token Ring.
Platforms: PC
Requirements: 386 DX/25 or higher, 4MB RAM, Microsoft Windows 3.1+ or Windows for Workgroups, Network connection, Video capture board, Audio capture board, Camera, Microphone, Speakers.
Price:
Contact Info: Peregrine Systems, Inc., 1959 Palomar Oaks Way, Carlsbad CA, 92009, USA, phone: +1.619.431.2400, toll free: 1-800-638-5231, fax: +1.619.431.0696, info@www.peregrine.com.
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: Yes
Collaboration Features: Application sharing of Windows-based applications.
Notes:
Survey Info Updated:

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nv (Network Video)

Version: 3.3 (beta)
Provider: Xerox/PARC
Description: nv provides unicast and multicast video over the Internet. It is commonly supplemented with vat (Visual Audio Tool) and wb (Whiteboard) for full-featured video/audio conferencing and collaboration.
Platforms: Sun SPARCstation, DECstation 5000 and Alpha, SGI, HP9000, IBM RS6000.
Requirements: Receivers need no special hardware - just an X display. Senders require a camera that is compatible with the video capture hardware: Sun/SunOS 4: Parallax, PARCVideo, VideoPix, X11. Sun/SunOS 5: SunVideo, VideoPix, X11. DEC 5000/Ultrix: PIP, X11; DEC Alpha/OSF 1: J300,X11; SGI/Irix 5: SGI VL (Indy, Galileo), X11. HP9000/HPUX: VideoLive, X11. RS6000/AIX: IBM VCA, X11.
Price: Free, available at ftp://parcftp.xerox.com/pub/net-research
Contact Info: Ron Frederick, frederick@parc.xerox.com
LAN Protocols: UDP/IP, IP Multicast.
Audio Encoding: N/A
Video Encoding: Native NV, CU-SeeMe, Sun CellB
Interoperability Standard Support:
Multipoint: Yes
Collaboration Features: None
Notes: nv, vat, and wb are tools commonly used with MBone. vat and wb are available at ftp://ftp.ee.lbl.gov/conferencing/. An on-line paper about nv is available.
Survey Info Updated: 26-May-95

Person To Person

Version: 1.0
Provider: IBM
Description: Video/Tools over Analog, ISDN, Ethernet, or Token Ring. Audio requires separate ISDN or Analog phone line.
Platforms: PC
Requirements: 386SX minimum, OS/2 2.x or Microsoft Windows 3.1+, 8MB memory, ActionMedia II hardware. Camera.
Price: $280
Contact Info: p2p@vnet.ibm.com, phone: +1.404.238.6726, fax info: 1-800-IBM-4FAX (in US) +1.415.855.4329 (outside US).
LAN Protocols: NetBIOS, TCP/IP, APPC, Novell IPX/SPX.
Audio Encoding:
Video Encoding: DVI
Interoperability Standard Support:
Multipoint: Yes
Collaboration Features: Whiteboard, File transfer, Talk window, Shared clipboard.
Notes: IBM's WWW page about P2P. DT5 WWW page about P2P.
Survey Info Updated:

Personal Viewpoint

Provider: ViewPoint Systems
Description: Video/Audio/Tools over Analog, Switched 56, ISDN, Ethernet, Token Ring.
Platforms: PC
Requirements: Microsoft Windows 3.1+, VGA graphics, 1 available slot.
Price: $1595 without camera, $1995 with camera.
Contact Info: ViewPoint Systems Inc., 2247 Wisconsin St., Suite 110, Dallas TX, 75229, USA, phone: +1.214.243.0634.
LAN Protocols: TCP/IP
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: Yes
Collaboration Features: Whiteboard, File transfer.
Notes:
Survey Info Updated:

PICFON

Version: 1.0
Provider: Specom Technologies
Description: Video/Audio over Analog and ISDN phone lines.
Platforms: PC

Requirements: 386 or higher, 4MB RAM, 40MB hard disk, DOS 5.0 or higher, camera.
Price:
Contact Info: Specom Technologies Corp., 2322 Walsh Ave., Santa Clara CA, 95051, USA, phone: +1.408.982.1880, fax: +1.408.982.1883.
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: Yes (maximum of 3 parties).
Collaboration Features: Still-image sharing.
Notes: Not sure if this is still available. See Specom's new product, TelePro.
Survey Info Updated:

PictureTel Live PCS 100

Provider: PictureTel
Description: Video/Audio/Tools over Switched 56, ISDN.
Platforms: PC
Requirements: 386 or higher, 2 ISA slots, Microsoft Windows 3.1+.
Price: $4995
Contact Info: PictureTel Corp., The Tower at Northwoods, 222 Rosewood Dr., Danvers MA, 01923, USA, phone: +1.508.762.5000, toll free: 1-800-716-6000, fax: +1.508.762.5245.
LAN Protocols:
Audio Encoding: G.721, G.722, G.728, PT 724 proprietary algorithm
Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint: Yes (maximum of 16 parties).
Collaboration Features: Whiteboard, File Transfer, Screen sharing, Application Sharing.
Notes: Supports network speeds up to 384kbps.
Survey Info Updated: 20-Feb-95

PictureTel Live PCS 50

Provider: PictureTel
Description: Video/Audio/Tools over ISDN.
Platforms: PC
Requirements: 386 or higher, 1 ISA slot, Microsoft Windows 3.1+, VAFC graphics connection (available from PictureTel).
Price: $2495
Contact Info: PictureTel Corp., The Tower at Northwoods, 222 Rosewood Dr., Danvers MA, 01923, USA, phone: +1.508.762.5000, toll free: 1-800-716-6000, fax: +1.508.762.5245.
LAN Protocols:
Audio Encoding: G.721, G.722, G.728, PT 724 proprietary algorithm

Video Encoding: H.261
Interoperability Standard Support: H.320
Multipoint: Yes (maximum of 16 parties).
Collaboration Features: Whiteboard, File Transfer, Screen sharing, Application Sharing.
Notes: A Version of PCS-50 complete with camera, speakerphone, and software will be included in the Zenith Data Systems Z-STATION GT 575 VC, a 75Mhz Pentium based system.
Survey Info Updated: 27-June-95

PictureTel LiveLAN

Provider: PictureTel
Description: Video/Audio/Tools over Local Area Network.
Platforms: PC
Requirements: 486-66+, video capture card, Microsoft Windows 3.1+, camera, audio card, speakers, microphone.
Price: $395
Contact Info: PictureTel Corp., The Tower at Northwoods, 222 Rosewood Dr., Danvers MA, 01923, USA, phone: +1.508.762.5000, toll free: 1-800-716-6000, fax: +1.508.762.5245.
LAN Protocols: IPX
Audio Encoding: Proprietary
Video Encoding: Proprietary
Interoperability Standard Support:
Multipoint: No.
Collaboration Features: Application Sharing.
Notes:
Survey Info Updated: 20-Feb-95

PictureWindow

Version: 1.4
Provider: BBN
Description: Video/Audio over the Internet.
Platforms: Sun SPARCstation.
Requirements: Sun SPARCstation (1,1+,2,IPX,10), 8 bit color or grayscale frame buffer, 24MB memory, SunOS 4.1.1 or later with IPC_SHMEM option, OpenWindows 2.0 or higher or X11 R4 or higher with an 8-bit PseudoColor visual, VideoPix card.
Price: $495 software only, $1495 with VideoPix and camera.
Contact Info: BBN, 150 Cambridge Park Drive, Cambridge MA, 02140, USA, +1.617.873.2000, toll free: 1-800-422-2359, fax: +1.617.873.5011, picwin-sales@bbn.com.
LAN Protocols: UDP/IP, TCP/IP.
Audio Encoding:
Video Encoding:
Interoperability Standard Support:

Multipoint: Yes
Collaboration Features: None
Notes: A receive-only demo is available through ftp at picwin.bbn.com (login as "picwin").
Survey Info Updated:

ProShare Video System 150

Version:Video System 150
Provider: Intel
Description: Video/Audio/Tools over LAN
Platforms: PC
Requirements: PC with Intel486(tm) 33 MHz CPU minimum, IntelDX2(tm) 66 MHz processor or Pentium(tm) processor recommended. Windows 3.1 or 3.11. 8 MB RAM minimum, 16 MB RAM recommended, plus 16 MB hard disk space (minimum). VGA display with 256 colors or higher (no feature connector required). Network interface card. 1 full-length ISA slot. Supported protocol stacks, at least one of:

IPX: Novell VIPX, Version 1.11, 1.17, 1.18
TCP/IP: FTP PC/TCP, Version 2.31, FTP OnNet, Version 1.1
Novell LAN WorkPlace for DOS, Version 4.12
NetBIOS:Microsoft Windows for Workgroups, Version 3.11

LANDesk Personal Conferencing Manager software installed on your LAN
Price: $1499, includes software, one full length ISA card, color CCD camera, headset/microphone unit.
Contact Info: Intel Corp., 2200 Mission College Blvd., P.O. Box 58199, Santa Clara CA, 95052-8119, USA, phone: +1.503.629.7354, toll free: 1-800-538-3373, fax: 1-800-525-3019.
LAN Protocols: NetBIOS, TCP/IP, IPX (LAN physical layer independent: Ethernet, Token Ring, FDDI, T-1, Frame Relay)
Audio Encoding: GSM
Video Encoding: Indeo.
Interoperability Standard Support:
Multipoint:
Collaboration Features: Whiteboard, application sharing.
Notes:
Survey Info Updated: 18-May-95

ProShare Video System 200

Version: Video System 200
Provider: Intel
Description: Video/Audio/Tools over LAN/WAN/ISDN.
Platforms: PC

Requirements: PC with Intel486(tm) 33 MHz CPU minimum. IntelDX2(tm) 66 MHz or Pentium(tm) processor recommended. Windows 3.1 or 3.11. 8 MB RAM minimum, 16 MB RAM recommended, plus 17 MB hard disk space (minimum). VGA display with 256 colors or higher (no feature connector required). 2 full-length ISA slots.

For ISDN use
NT-1 adapter I
SDN telephone service from local phone company
For LAN/WAN use
Network interface card
Supported protocol stacks, at least one of:
IPX: Novell VIPX, Version 1.11, 1.17, 1.18
TCP/IP: FTP PC/TCP, Version 2.31, FTP OnNet, Version 1.1
Novell LAN WorkPlace for DOS, Version 4.12
NetBIOS: Microsoft Windows for Workgroups, Version 3.11

LANDesk(tm) Personal Conferencing Manager software installed on LAN
Price: $1999, when user purchases either local ISDN Service from a participating LEC or long distance ISDN Service from an IXC, the price drops to $1499. When purchasing *both* local and long distance ISDN service from participating carriers, the price drops to $999). Includes software, 2 full length ISA cards, color CCD camera, headset/microphone unit.
Contact Info: Intel Corp., 2200 Mission College Blvd., P.O. Box 58199, Santa Clara CA, 95052-8119, USA, phone: +1.503.629.7354, toll free: 1-800-538-3373, fax: 1-800-525-3019.
LAN Protocols: NetBIOS, TCP/IP, and IPX
Audio Encoding: GSM, G.711
Video Encoding: Indeo., QCIF H.261
Interoperability Standard Support: H.320
Multipoint: Yes, using H.320-compatible bridges.
Collaboration Features: Whiteboard, application sharing.
Notes:
Survey Info Updated: 18-May-95

PSVC (Paradise Software Video Conferencing)

Version: 2.1
Provider: Paradise Software, Inc.
Description: Audio/Video/Tools over ISDN, Ethernet, ATM.
Platforms: Sun SPARCstation
Requirements: Parallax XVideo/PowerVideo boards, SunOS 4.1.3 or Solaris 2.3, OpenWindows 3.x, 1MB disk space, 16MB memory, 16 MB swap.
Price: $995 (without any hardware)
Contact Info: Paradise Software, Inc., 7 Centre Drive, Suite 9, Jamesburg NJ, 08831, USA, phone: +1.609.655.0016, fax: +1.609.655.0045, support@paradise.com.
LAN Protocols: TCP/IP
Audio Encoding:
Video Encoding: M-JPEG

Interoperability Standard Support:
Multipoint: Yes
Collaboration Features: Whiteboard, Video Mail, Screen Capture.
Notes: Support for HP 700 series, Motif forthcoming. PSVC is integrated into Paradise Software's new "Simplicity" virtual meeting software. Paradise Software Products WWW Page.
Survey Info Updated:

ShareVision Mac 3000

Provider: Creative Labs
Description: Audio/Video/Tools over Analog phone line.
Platforms: Macintosh
Requirements:
Contact Info: Creative Labs, Inc., 1901 McCarthy Boulevard, Milpitas CA, 95035, USA, phone: +1.408.428.6600, toll-free: 1-800-998-1000, fax: +1.408.428.6611, AppleLink: SHAREVIS.MKT.
Price: $1299
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support: Future Versions will support the ITU-T H.324 standards which are expected to be ratified in November 1995.
Multipoint:
Collaboration Features:
Notes: Interoperable with ShareVision PC product.
Survey Info Updated: 06-June-95

ShareVision PC 3000

Provider: Creative Labs
Description: Audio/Video/Tools over Analog phone line.
Platforms: PC
Requirements: 486SX/33MHz (486DX/66MHz recommended), 2 available 16-bit ISA bus slots, 8MB RAM, 6MB hard disk space, Windows 3.1, VGA or SVGA display (16-bit or 24-bit VGA display card recommended).
Price: $1599, includes software, 2 boards (Video Blaster RT300 video capture/compression card and ShareVision PC Audio card), color CCD camera, fax/modem, headset/microphone.
Contact Info: Creative Labs, Inc., 1901 McCarthy Boulevard, Milpitas CA, 95035, USA, phone: +1.408.428.6600, toll-free: 1-800-998-1000, fax: +1.408.428.6611.
LAN Protocols:
Audio Encoding: VATP
Video Encoding: VATP
Interoperability Standard Support: Future Versions will support the ITU-T H.324 standards which are expected to be ratified in November 1995.

Multipoint: No.
Collaboration Features: Application sharing, Whiteboard, Document sharing, File transfer.
Notes: Interoperable with ShareVision Mac product.
Survey Info Updated: 06-June-95

ShowMe

Version: 2.0.1
Provider: Sun Microsystems
Description: Video/Audio/Tools over the Internet.
Platforms: Sun SPARCstation
Requirements: Solaris 2.3 or later, X11 R5, OpenWindows 3, 1 SBUS slot, SunVideo board, SunMicrophone.
Price: $3270, including SunVideo board and camera. Educational discount available.
Contact Info: sunsol-www@sunsolutions.eng.sun.com, toll free: 1-800-873-7869.
LAN Protocols: UDP/IP, TCP/IP, IP Multicast, RTP.
Audio Encoding: G.711 (uncompressed 8-bit, 8 KHz audio bit stream at 64 Kilobits per second)
Video Encoding: CellB
Interoperability Standard Support: No
Multipoint: Yes, with and without IP Multicast.
Collaboration Features: Whiteboard, Application Sharing for X11 R4/R5-based applications and Wabi 1.0 supported MS Windows applications.
Notes:
Survey Info Updated: 26-Apr-95

TelePro with VisionTime

Provider: Specom Technologies Corp.
Description: Video/Audio/Tools over WAN (Analog phone lines and ISDN).
Platforms: PC
Requirements: 386 PC, 8MB RAM, 8MB disk space, Windows 3.1+, high-color VGA card with 64K true colors, video capture card with Video for Windows drivers, camera.
Price: $995, includes software, frame grabber card, voice/data modem, handset.
Contact Info: Specom Technologies Corp., 2322 Walsh Ave., Santa Clara CA, 95051, USA, phone: +1.408.982.1880, fax: +1.408.982.1883.
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: Optional, up to 64 simultaneous users.
Collaboration Features: Document sharing of Windows applications, supports Windows application sharing through OLE.
Notes:

Survey Info Updated:

TeleView 1000C

Provider: VCC (Video Conferencing Communications, Inc.)
Description: Video over Analog phone lines.
Platforms: PC
Requirements:
Price: $3995 includes boards and software.
Contact Info: Video Conferencing Communications, Robert Medrano, phone: +1.714.452.0800.
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint:
Collaboration Features:
Notes:
Survey Info Updated:

VC8000

Provider: BT (British Telecommunications plc)
Description: ISA PC multimedia communications card. Software applications packages from IBM, ICL or Olivetti provide the user-interface. Allow Audio/Video/Tools over ISDN.
Platforms: PC
Requirements: 20 MHz IBM PC 386 (486 recommended), 8MB RAM, 10-15MB hard disk space, full length ISA expansion slot, VGA, SVGA or XGA monitor (non-interlaced), ISDN2, Microsoft Windows 3.1 or higher, DOS 5.0 or higher, BT partner application software.
Price:approximately 2700 UK pounds (excluding PC software), includes ISA card, NTSC or PAL camera, audio unit, connection unit, AC/DC adaptor, associated leads and accessory pack.
Contact Info:

USA/Canada Inquiries: BT Visual Images, 360 Herndon Parkway, Suite 2200,
Herndon, Virginia 22070-4820,
Tel. (800) 778-4820
Fax. (703) 709-4231 for attention of John Taylor
EMAIL: taylor@vaherndon1.btna.com

Rest of the world: BT Visual Systems, PP1.1, Ambassador House,
75-77 St. Michaels Street, London, England, W2 1QS.
Tel. +44 171 298 4194
Fax. +44 171 298 4325 for attention of Kim Britten
EMAIL: 100627.3617@compuserve.com,

ATTN: Simon Grumbt or Kim Britten

Technical Information: iain@empire.bt.co.uk (technical questions only please).

LAN Protocols:
Audio Encoding: G.711, G.722, G.728
Video Encoding: H.261 (QCIF moving images, CIF image capture)
Interoperability Standard Support: H.320
Multipoint: Yes (H.242)
Collaboration Features: Application sharing, file transfer, chalkboard.
Notes: Basic rate ISDN (I420) S-Interface. ISDN code supports AT&T, Northern Telecom, and Siemens implementations of US National ISDN 1, Euro-ISDN, Australia, Japan. 56 and 64 Kbits/s long distance connections are supported. Full interworking between country variants. CIF resolution for image capture, QCIF resolution for moving images. T.120 data support soon. Has own 'telephone' which remains operational for audio calls (loudspeaking or handset) when the PC is powered down. Card software for audio and video coding and ISDN is down-loadable from the host PC. All processing is done on the card. Hardware and software are available and approved for connection to public telecommunications networks in the USA, Canada, UK, Australia, Japan, Austria, Denmark, Eire, France, Germany, Holland,Belgium, Sweden, Finland, Norway, Switzerland, Spain, and Luxembourg. PC applications are available from IBM (ScreenCall and P2P), Olivetti (PCC), and ICL/Fujitsu (TeamVision), offering various group working features on top of the videophone. A connection box with ports for external cameras, monitors microphones and speakers (or a VCR) is provided.
Survey Info Updated: 31-July-95

VicPhone

Provider: VIC Hi-Tech Corporation
Description: Video/Tools over Analog, ISDN phone lines or Ethernet. Audio can be sent over the same analog line with a voice-modem. No additional line required for voice over ISDN.
Platforms: PC
Requirements: 486/33 or faster, 16-bit ISA bus, Microsoft Windows 3.1+, VGA board with feature connector, 9.6 - 28.8 modem or network, CCD camera (NTSC,PAL,S-VIDEO).
Price: $599, includes video capture/display card,videoconferencing software and additional multimedia video/audio capture/edit/playback features.
Contact Info: VIC Hi-Tech Corporation, 2221 Rosecrans Avenue, Suite 237, El Segundo CA, 90245, USA, phone: +1.310.643.5193, fax: +1.310.643.7572, Compuserve: 70544,2472.
LAN Protocols:
Audio Encoding:
Video Encoding: JPEG software compression/decompression
Interoperability Standard Support:
Multipoint: Point-to-point modem operations, Multi-point LAN/WAN operations.
Collaboration Features: Shared image/document workspace with mutual chalkboard, file transfer, text chat window.
Notes: H.320 in next release.
Survey Info Updated:

VidCall

Provider: MRA Associates Inc.
Description: Video/Tools over Analog, ISDN, Ethernet, Token Ring. Audio requires separate phone line or voice/data modem to send voice and video over one telephone line.
Platforms: PC
Requirements: 386/33 (486 recommended), 2 MB disk space, 4 MB RAM, VGA graphics, Microsoft Windows 3.1+ or Windows NT, Microsoft mouse, video capture board (compatible with many boards including Video For Windows compatible boards), MNP/V.42 modem (14.4+) or Windows compatible LAN, WAN, TCP/IP network, still or motion camera.
Price: $99, includes software for two stations and documentation.
Contact Info: MRA Associates Inc., 2102B Gallows Rd., Vienna VA, 22182, USA, phone: +1.703.448.5373, fax: +1.703.734.9825, BBS: +1.703.448.5931.
LAN Protocols:
Audio Encoding: Audio transmitted on analog phone line.
Video Encoding: Proprietary video encoding routines.
Interoperability Standard Support: No
Multipoint: Point-to-point modem operations, Multi-point LAN/WAN operations.
Collaboration Features: Whiteboard, Image sharing and annotation, application sharing via OLE.
Notes: Demo available from WWW page.
Survey Info Updated: 13-Mar-95

VISIT

Version: 2.0
Provider: Northern Telecom Inc.
Description: Video/Tools over ISDN or Switched 56. Audio requires separate ISDN or Analog phone line.
Platforms: PC, Macintosh.
Requirements: PC: 386 minimum and hard drive, Microsoft Windows 3.1+, AT-bus expansion slot, DOS 5.0 or greater, 8MB RAM (12 MB RAM max on ISA PC, 16MB or more possible on EISA w/ memory re-mapping), 256-color VGA board and color monitor (Super VGA w/ thousands of colors support recommended). Mac: Macintosh II family or other NuBus-equipped Apple computer, NuBus expansion slot, System 7 or greater, 8MB RAM, Color monitor. Camera included with product.
Price: $5319
Contact Info: Northern Telecom Inc., 2221 Lakeside Blvd., Richardson TX, 75082, USA, +1.214.684.5930, toll free: 1-800-667-8437, fax: +1.214.684.3866.
LAN Protocols:
Audio Encoding:
Video Encoding: H.261
Interoperability Standard Support: Future Versions promise H.320 compliance.
Multipoint: No
Collaboration Features: Whiteboard, File transfer.
Notes:

Survey Info Updated: 31-July-95

VideoVu

Provider: Future Communications Systems, Inc.
Description: Audio/Video/Tools over modem, LAN, or Internet
Platforms: PC
Requirements:
Price: $74.95, VideoVu Two Pak $129.95, VideoVu Complete Kit $325 (2 copies of VideoVu with the Video Logic Captivator PRO capture board)
Contact Info: Future Communications Systems, Inc., P.O. Box 244, Syosset N.Y. 11791 USA, phone: +1.516.496.7121, fax: +1.516.496.7121, future@i-2000.com.
LAN Protocols:
Audio Encoding:
Video Encoding:
Interoperability Standard Support:
Multipoint: Yes (LAN/WAN only, up to 8 participants)
Collaboration Features:
Notes: Demo disk available (info on WWW page)
Survey Info Updated: 26-May-95

Vivo320

Provider: Vivo Software, Inc.
Description: Video/Audio/Tools over ISDN.
Platforms: PC
Requirements: 486 66-MHz PC, 8 MB memory, A PC display adapter using the PC's local bus (either VESA or PCI), Two free ISA or EISA slots, not necessarily adjacent, in your PC, Microsoft Windows 3.1.
Price: $1995, includes:

Vivo320 software application
Logitech VideoMan digital video camera and microphone
Monitor-top and desktop stands for the VideoMan camera
speaker for hands-free operation and an earpiece for privacy
Logitech MovieMan ISA-bus video capture card
The IBM WaveRunner ISA-bus ISDN terminal adapter card and associated driver software
software installation kit including device drivers
Documentation and technical support

Contact Info: Vivo Software, Inc., info@vivo.com, phone: +1.617.899.8900, toll-free: 1-800-848-6411, fax: +1.617.899.1400.
LAN Protocols:
Audio Encoding: send and receive audio using either the G.711 toll-quality audio standard, or the G.722 7KHz high-band audio standard.
Video Encoding: transmits QCIF (176x144), receives CIF (352x288) and QCIF
Interoperability Standard Support: H.320
Multipoint: Yes, using H.320 compliant MCU (Multi-point Conferencing Unit).
Collaboration Features: Document Sharing (Databeam's FarSite 2.0 collaboration software included), Image Presentation and markup.
Notes: all audio/video coding done in software
Survey Info Updated: 30-May-1995

VS1000

Provider: Mentec International Ltd.
Description: Video/Audio
Platforms: PC
Requirements: Microsoft Windows.
Price:
Contact Info: Mentec International Ltd., Mentec House, 520 Birchwood Boulevard, Birchwood, Warrington, WA3 7QX, Great Britain, phone: +44 925 830000.
LAN Protocols:
Audio Encoding: G.711
Video Encoding: H.261
Interoperability Standard Support:
Multipoint:
Collaboration Features:
Notes:
Survey Info Updated:

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